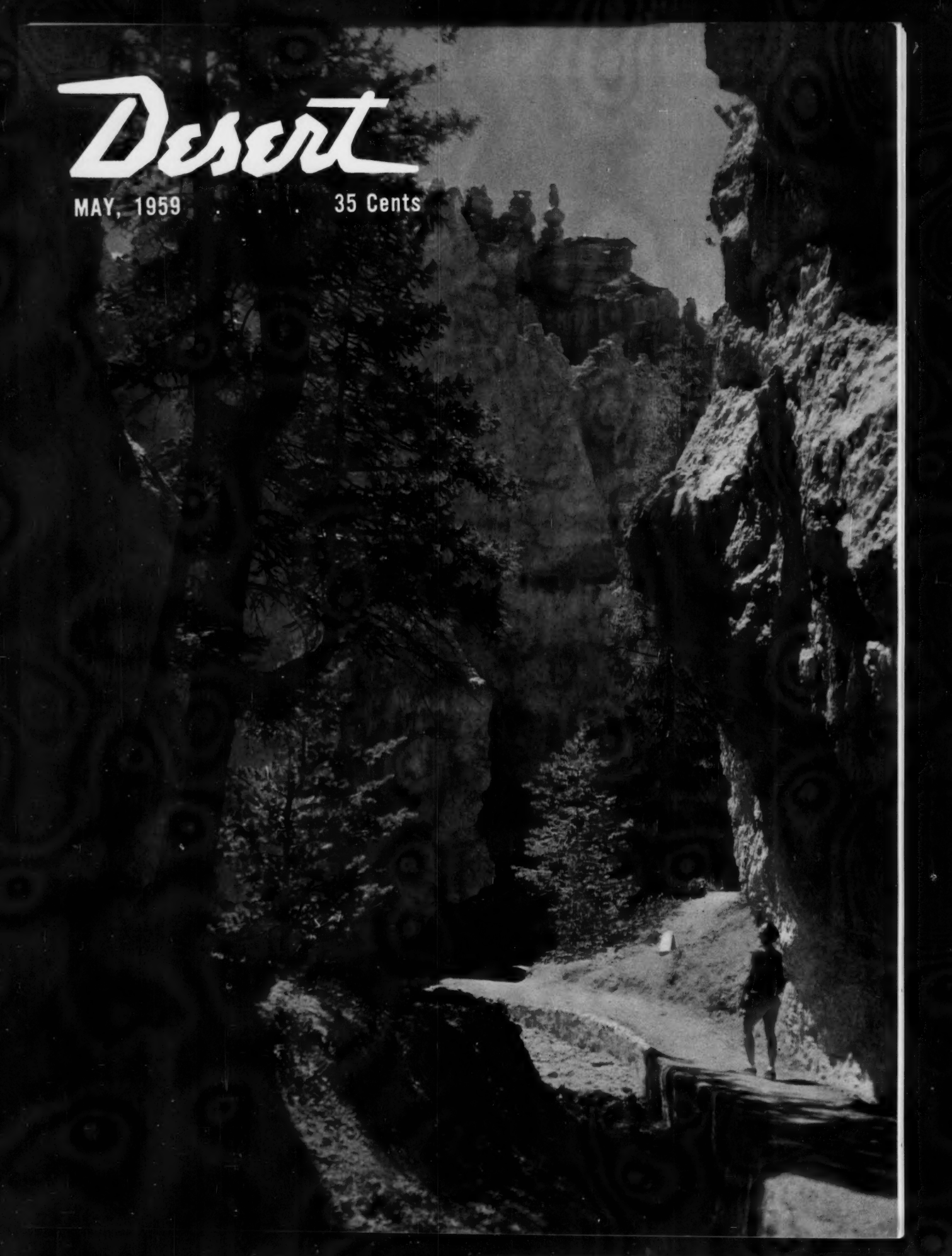


Desert

MAY, 1959

35 Cents





Costa's Hummingbirds

Robert Leatherman's camera provides a scene seldom witnessed by the naked eye: the frozen action of a hummingbird. The photograph, first-prize winner in this month's contest, is two-and-a-half times life size. It was taken on a May afternoon in a desert wash east of the photographer's San Bernardino, California, home. This mother Costa's is greenish above; the under-body is white. It is nearly impossible to distinguish between this bird and the female black-chinned hummingbird in the field.

PHOTO CONTEST: you are invited to enter desert-subject photographs (black and white, 5x7 or larger) in Desert's contest. One entry will be selected each month, and a \$10 cash prize awarded to the photographer. All other entries will be returned—provided postage is enclosed. Time and place of photograph are immaterial—except that the photo must be of a Desert Southwest subject. For non-winning pictures accepted for publication, \$3 each will be paid. Address all entries to: Photo Contest, Desert Magazine, Palm Desert, California.

Desert

...magazine of the Outdoor Southwest

Volume 22 MAY, 1959 Number 5

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ABOUT THE COVER . . .

. . . Parker Hamilton of Flagstaff proves again that the warm beautiful colors of Bryce Canyon National Park in Utah make that area one of the most rewarding on earth for the color photographer. A portion of the Navajo Trail at Bryce is shown in the cover photo. The park is open all year. Evenings there are cool—often chilly—the days are warm. Hamilton is a beginning free-lance photographer and it may be that more of his fine work soon will be seen in this publication.

Publisher's Notes . . .

It is not easy to get lost when you have a map to follow. But last month two of our maps got lost—somewhere in Mexico—trying to find our cartographer, Norton Allen.

Our editorial office prepared all the necessary data for Norton Allen to use in drawing a map for Harold Weight's field trip story and for Ken Wortley's lost mine piece. We mailed the information to Norton, who was vacationing in Mexico. Then we waited.

Finally, deadline time, and no maps from the Mapman. At the next to last moment we traced Norton to Tepic, in western Mexico. He told us by long distance phone that our lost treasure was still lost, as far as he was concerned.

So artist Margo Gerke, former *Desert* staff member, did a hurry-up job for us, pinch-hitting for Norton Allen. Allen, incidentally, will be back in the United States (and back in *Desert*) next month.

And his substitute, Miss Gerke, will be leaving *Desert's* sphere to enter the State of Matrimony.

It may be officially noted, now that the month of May is here, that this was a "mighty pore" spring for wildflowers on the desert. About the only blooms most of you will see are the lovely Mariposa lilies on our back cover, courtesy of Josef Muench's camera.

Fire hazard season in our brushlands and mountains is here, so we think it especially timely to report on the famous fire-prevention bear, Smokey, and to recall his beginnings, in the article, "Smokey Bear's Early Days," on page 7.

One of the top Nature photographers of the Southwest, Bob Leatherman, is this month's photo contest winner. Leatherman has won top *Desert* honors several times during the past decade. And if he can continue to turn in pictures as delightful as his family scene at the edge of a hummingbird's home (opposite page), then we can promise him further laurels in future years.

CHARLES E. SHELTON
Publisher

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Severe dust conditions are created for this test by the pickup at far right which is towing a heavy drag.

Ford's Desert Proving Grounds

Ford Motor Co. is testing new and future automotive components at a secret proving grounds on the Arizona desert near Kingman. Cars are driven over punishing dirt tracks, enveloped in man-made dust storms and subjected to other tests while engineers study the results.

By EUGENE L. CONROTTO

THE DESERT ROAD we were driving over was rougher than most dirt trails, for its washboards and chuckholes were purposely created to torture automobiles.

Benn Keller drove the Lincoln over one stretch where the bumps affected only the right wheels. Next came a dip with punishing left-wheel bumps, and then we hit a jarring stretch of trenches in which all four wheels hit bottom at the same time.

Benn is manager of the Ford Motor Company's 4000-acre Arizona Proving Grounds near the tiny settlement of Yucca, 25 miles west of Kingman on Highway 66. Almost 100 men are busy here around the clock doing road test work on today and tomorrow's cars, trucks and automotive components. At the invitation of the Ford Motor Company I recently visited this modern installation on the broad barren plain framed between the somber Hualpai and Black mountains.

In addition to the 25 miles of secondary roads for durability testing on the Ford property which Benn was introducing me to, there is a five-mile three-lane high speed endurance track where cars and tires are evaluated over long grueling runs.

After we completed the desert road course, we entered the paved track. In a matter of seconds the car's speedometer eased over to the 120 mph mark—maximum registered speed—and rested there. I glanced out the window. Joshua trees, ocotillo and creosote bushes lining the five-mile oval track slipped backward in a green blur.

As we entered the sloped curve, Benn took both hands off of the steering wheel.

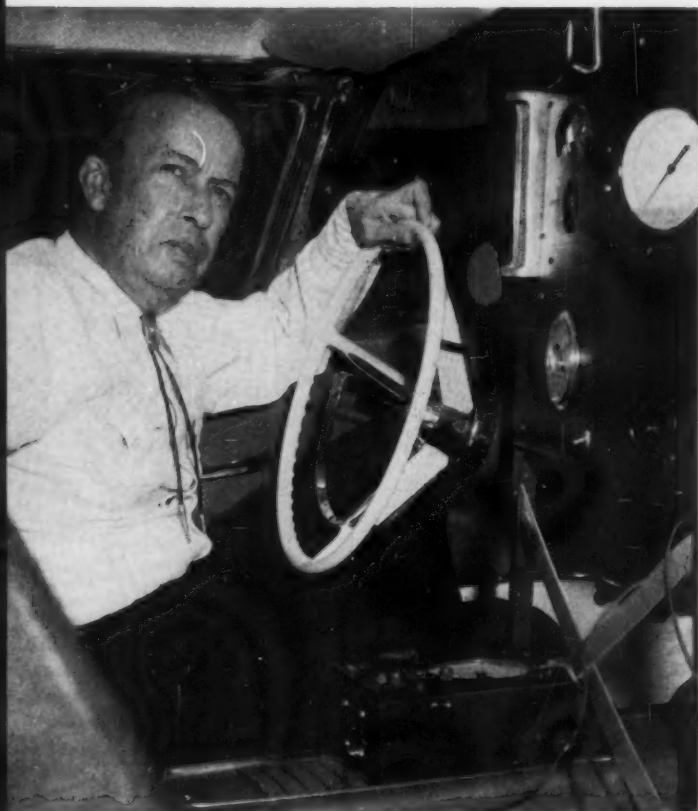
"Notice how perfectly this track is engineered?" he asked in a casual tone. "It's banked steeply enough to handle speeds up to 140 mph without any side thrust. The car seeks its own level on the curves according to its speed—steering is unnecessary. Just like the side-show motorcycles spinning around the inside walls of a barrel."

To test and evaluate its products—and the products of competitors — Ford has five testing stations: the main engineering labs at Dearborn and Romeo, Michigan, employing about 300 men each; seasonal stations at Colorado Springs, Colorado, and Jennerstown, Pennsylvania; and the Southwest station at Kingman. General Motors has a proving grounds in the Phoenix area, and Chrysler reportedly is considering establishing a desertland test ground.

Ford came to the desert in 1946. For nine years it operated in a small way out of a Phoenix garage, using the public highways for most of its tests. In 1953 the company acquired the Mohave County property, and in May, 1955, the Arizona Proving Grounds was in business.

Heart of the operation is the gleaming white air-condi-

Benn Keller, Proving Grounds manager, at the wheel of a heavily-instrumented test vehicle.



tioned office-shop-garage building which faces across a green lawn and swimming pool the employee's services building where cafeteria, lounge and visiting officials' apartments are located.

There are very special reasons why this isolated plain was chosen.

First there is climate. Summer temperatures here are close to the maximum encountered anywhere in the U.S.; in winter road testing is not interrupted by snow which hampered Eastern operations.

Second consideration was seclusion. The Proving Grounds is completely enclosed by a high chain link fence. Unauthorized visitors cannot enter.

Despite the fact Ford people had invited me to visit the installation weeks in advance, I had to go through about as much red tape to get into this plant as I did a year before getting out of a Navy base in Southern Nevada into which I had inadvertently wandered.

The reason for all of this is simple: the need for secrecy. In January of this year the first of Ford Motor Company's 1960 prototype models began arriving at the Arizona Proving Grounds, and many of the current models have '61 and even '62 components which are undergoing tests.

All new model prototypes are driven out from the East—camouflaged with plywood, stripped of all chrome and insignias, and their drivers instructed not to answer any questions. These cars are hand-made at tremendous cost, but when their mission at Kingman is completed, they are saturated with gasoline, set aflame and then buried under the desert sand in an unmarked grave. There is no market for experimental cars.

Benn explained that it was more important to keep the new model secrets away from Ford Motor dealers than from engineers of rival companies. The latter probably have a good idea of what Ford is doing from their own work and research, the interchange of industry personnel, gossip from common vendors, and highly educated guesses. But dealers who see and like next year's cars (the purpose of style changes is to bring about this very reaction) may hold back on their current year orders, and thus affect sales.

Dust—its availability and not its lack—is another reason Ford settled near Kingman. There is a special dusty stretch on the secondary roads where a truck towing a drag can simulate sand storms far greater than the average desert traveler will ever encounter. Cars fitted with air filters,



Main building contains offices, shops and garage.

carburetors, and ventilators which are being tested, follow close behind the drag. In the more severe tests, the drivers must wear inhalators. There are no irate neighbors to complain over such testing.

Fourth factor for the plant's location is the 6500-foot variation in elevation within a 40-mile radius of the Proving Grounds—invaluable conditions for performance testing cars and trucks. About 75 percent of all road testing takes place on the public highways between the Colorado River, at elevation 500 feet, and Hualapai Mountain Park near Kingman, where the road winds up to the 7000-foot level.

And the last reason is that the Desert Southwest is becoming an increasingly important factor in the nation's economy. More and more people are driving more and more miles in this vast area.

Benn showed me a test car. The passenger's side of the front seat was a maze of instruments and rubber hoses leading to various components being tested under the hood and in the rear-end. On the floorboards were iron weights

A Thunderbird simulates a long uphill drive by pulling a special "towed truck" around high-speed track. The truck has special gears which make it possible to transfer any given weight-drag to vehicle being tested.



and sand bags to bring this particular vehicle up to the exact test weight.

When a driver starts his workday, he is given a printed instruction sheet setting forth the test assignment. It may be that the engineers want to check a 1962 transmission under temperature and pressure conditions, so the car equipped with one is accelerated up to a certain speed, abruptly stopped, backed up to the starting point, again accelerated, stopped, backed up, etc. This may go on for three eight-hour shifts, six days a week.

Not all tests are conducted on moving vehicles. Parked behind the shop was a new station wagon. It had been in the open for six months testing how the simulated wood side panels can take sun, wind and cold.

If a test presents a potential violation to existing state traffic laws, or might be a highway hazard, it is performed on the proving grounds.

Special equipment is employed for most of the testing. I watched a simulated 10,000-foot uphill drive by a Thunderbird. The Ford people tortured the T-Bird by making it pull a "towed truck," with special gears that can transfer any given weight-drag to the test car. All tests are calculated to abuse vehicles and equipment two and a half times more severely than they actually are subjected to under the most severe driving conditions by the average car owner.

Competition and free enterprise are more than catchwords at the Arizona Proving Grounds.

Personable and competent, Benn Keller has been with Ford two and a half years. Prior to that he was with the Packard Proving Grounds in Michigan for 17 years and was manager when the facility was abandoned. He took over at Kingman last November.

Benn received his mechanical engineering training at the University of Michigan, and went right to work for Packard after graduation in 1937. He and his wife, Ruth, have two children, a four-year-old son and a seven-year-old daughter. The family, like 90 percent of the APG employees, lives in Kingman. As far as Benn is concerned, you couldn't put him any other place on earth more to his liking.

"Kingman has everything to offer—every day dawns bright and clear," he explained. "We're near Lake Mohave, Boulder Dam and Las Vegas . . . Phoenix is only three and a half hours away . . ."

Three and a half hours—a ride made more comfortable, more carefree, more economical—partly because of the conscientious labor of Benn Keller and his crack crew.—END

STARTING NEXT MONTH

Desert Driving Tips

By BENN KELLER

Manager of Ford's Desert Proving Grounds

The Desert Southwest—with its excesses in heat and dust, its rutted byways and long stretches of straight highways—makes special demands on automobiles and their drivers. In the coming months, Benn Keller will discuss in these pages various aspects of desert driving and auto maintenance. Subjects that he will cover are "Sand and Dust," "Cooling System," "Vapor Lock," "Tire Wear," "Refrigerated Air Conditioners," and others.

DESERT QUIZ

Tenderfoot or desert rat, you'll want to tackle these 20 questions for two good reasons: to find out how much you know about the great desertland; and to find out what you don't know. Fourteen correct answers is a passing grade; 16 is good; 18 or more is excellent. Answers are on page 34.

1. 1680 is a famous Southwestern historical date for it marks—The Pueblo uprising against the Spaniards.....
Founding of Calexico..... Gadsden Purchase.....
First overland mail to California.....
2. "Float" that prospectors follow to mineral ledges is—
A river trail..... A sand trail..... Weathered-out ore.....
Earthquake faults.....
3. California's Morongo Pass divides the San Bernardino Mountains from the—Chocolate Mountains..... Santa Rosas.....
Little San Bernardino..... Whipples.....
4. Salome, Arizona, is remembered as the home of—Dick Wick Hall.....
Geronimo..... Pauline Weaver.....
Walkara.....
5. One of the following dams is not on the Colorado River—
Imperial..... Elephant Butte..... Parker.....
Boulder.....
6. Bill Williams, who gave his name to an Arizona city, mountain and river, was a—Mining engineer..... Mountain man.....
Indian Chief..... Missionary.....
7. Today, the giant sloth is found only in — Northern Nevada..... Southern Nevada..... Eastern New Mexico.....
It is extinct.....
8. The "tree that jumps" is another name for the—Joshua tree.....
Saguaro..... Paloverde..... Cholla cactus.....
9. Arizona's famed Meteor Crater is on the plain between—Phoenix and Wickenburg..... Tucson and Yuma.....
Winslow and Flagstaff..... Kingman and Flagstaff.....
10. In the famous fight at the O.K. Corral, Doc Holiday was on the side of the — Clantons..... Earps.....
Billy the Kid..... John Ringo.....
11. Desert five-spot is a—Famed Death Valley mine..... Wildflower.....
Card game..... Monument Valley landmark.....
12. Function of the rattle on rattlesnakes is to—Warn mates of danger.....
Warn adversaries..... Lure prey.....
Locomotion.....
13. Early Spaniards knew the Gulf of California as the—Devil's Waters.....
Vermilion Sea..... Sea of Fish.....
Dark Ocean.....
14. Distinguishing characteristic of Pegleg Smith's lost gold nuggets were their — Black color..... Unique free form.....
High silver content..... Light weight.....
15. Bingham Canyon in Utah is famous for its—Weaving industry.....
Silver mines..... Copper pit..... Winter tourist resorts.....
16. State flower of Arizona is the—Verbena..... Rose.....
Saguaro..... Lily.....
17. Morro Rock in New Mexico is famous for its—Indian legends.....
Odd shape..... Historical inscriptions.....
Orange-red coloration.....
18. Halite is more commonly known as — Sulphur..... Soda.....
Potash..... Salt.....
19. Brigham Young led the Mormons to Utah in—1820.....
1833..... 1847..... 1869.....
20. The phainopepla is a desert—Jackrabbit..... Bird.....
Tree..... Cactus.....





By STEVE LOWELL

NINE YEARS AGO this May, a little black cinder, partly covered with singed fur, clung to the limb of a burned tree, and cried. The pitiful whimpers caught the attention of a crew returning from the fire line in the Sacramento Mountains of south-central New Mexico.

The man in charge, Orville Luttrell of the State Game Department, cautioned the men against bothering the bear cub, a miserable little ball of charred fuzz. He explained that its mother might return, if the fire hadn't killed her.

In camp, Luttrell told the story to Ray Bell, chief law enforcement officer of the Game Department at that time. That's when the idea was born for a live stand-in for the Smokey Bear that had been used for two or three years on fire prevention posters.

"I told Orville if he ran onto the bear again to bring it in," Bell recalls. "I told him it would probably die otherwise, and that I had something else in mind for the little fellow."

Forester Ray Bell is a man who gets ideas and then follows them through. Nine years ago he was fighting a forest fire in New Mexico when a singed bear cub was found. Ray figured it would make a fine fire prevention symbol — and Smokey Bear was on his way to good works and fame.

The next day a crew of soldiers returning from the fire line brought in the cub. They fed it candy and canned milk, and then gave it to a rancher to take home. Bell was told of these developments when he got into camp that evening.

"Early the following morning I borrowed a car and drove to the ranch," Bell relates. "I asked the rancher's wife if I could take the cub and put it in the care of a veterinarian."

"She said she wished I would take

Smokey already was on his way to becoming national fire prevention symbol when this photo was made — only weeks after Ray Bell, now New Mexico State Forester, nursed fire-scarred bear back to health.

it, because she was sure it was going to die, and she didn't want a dead bear on her hands. So, I took the cub back to the fire camp. We found a little pasteboard box no larger than a shoe box, punched some holes in its top, and put in a little cloth and our sick cub. We wrapped twine around the box to keep Smokey from climbing out, and I flew him home to Santa Fe and turned him over to a veterinarian. Smokey weighed four pounds.

"The vet kept the cub two days, then I took it home. Although Smokey seemed to be recovering, he wouldn't eat.

"I took him back to the vet a few days later to have the bandages on his feet changed, and more salve put on his rump.

"The vet kept him another couple of days, but the only food the tiny

rascal would take was a little milk poured down his throat.

"When I took him home the second time, my wife decided to try mixing baby cereal with milk and honey. We rubbed some of that on Smokey's snout, and he started to eat. From that day on, we had no trouble.

"In time the burns healed, and Smokey took up with our little cocker spaniel pup, which was almost the same size as the bear. They had the run of the house. Judy, our little daughter, who was four years old then, was in on their romps.

Bell Gets Blamed

"Smokey seemed to believe I had something to do with his hurts, and never failed to bite me when he got a chance. He never bit Judy, and only once bit my wife—but that was my fault. I took hold of Smokey when he was in her lap."

By this time many Forest Service men throughout the country had learned about the cub, and they were urging Washington headquarters to carry Bell's idea through as part of the fire prevention campaign. Cliff Davis of the Forest Service liked the plan, and he asked the New Mexico Game Department to send the cub to the Washington Zoo to become the living Smokey Bear of the fire posters.

"The airlines wouldn't take the bear," Bell recalls, "so Smokey was flown to Washington in a light plane."

He took off from Santa Fe on June 27, 1950, and made several stops along the way—met at each one by considerable crowds, liberally seasoned with children. It was raining when Smokey arrived in Washington, but many people were on hand to greet him.

Bell, now chief forester for New Mexico, figures that since black bears usually are born in January, Smokey was about three-and-a-half months old when he was found. He weighed but eight pounds when he made his trip to the Washington Zoo.

Old Friends

"I was sorry to see Smokey leave," Bell says, "and so were my wife and Judy. We had become attached to the little cub. My wife was the closest to him because she gave him his food, and she saw to it that his blanket was in its proper place every night—in the washing machine where he slept.

"Judy begged me not to let Smokey go, but I could see that the day was not far off when we'd have to move out of the house and let Smokey have it all to himself. Besides, I had several scratches and bites on my hands,

and I was willing to let them heal."

Smokey still has a place in the Bells' hearts. Last year Judy accepted a gold statuette of Smokey from President Eisenhower in behalf of the people of the village of Capitan who built a memorial in honor of the cub and what

he stands for. Smokey has appeared on millions of posters urging fire prevention. The message on these posters takes on added significance when we visualize a helpless orphaned bear cub facing the terror of a rampaging fire. —END

DESERT PRIMER

HIEROGLYPHICS art work of the ancients

In a thousand places on the Desert Southwest, prehistoric Indians have left their markings on the rocks. This art work often is referred to as hieroglyphics, and in a broad sense of the term that is what it is. However, it is much more accurate to describe them as either petroglyphs or pictographs—and it



is important that the distinction be made between these two types of figures.

Petroglyphs are incised in the rock with a tool harder than the rock in which they have been chiseled. Hence, the ancient tribesmen used a stone tool—a sharp-pointed rock of obsidian or quartz or whatever may have been available.

Pictographs are painted on the rocks, probably with a brush of yucca or agave fiber, although there is evidence in many places that fingers were used for this task. There are places in southern Utah that show the print of the complete hand, as if the artist had dipped his or her hand in a vessel of paint and then pressed it against the stone.

Generally pictographs are found in caves or on sheltered rock faces not subjected to the erosive effect

of rain or blowing sand. However, in some instances, as in Horseshoe Canyon, Utah (*Desert*, Oct. '57), these painted figures are still well preserved on exposed rock walls. Evidently the prehistoric tribesmen had found a tough resistant fluid to mix with the pigment they had ground from colored stone—a secret which would interest the paint-makers of today.

Petroglyphs are much more common, and in some sites, as in Petrified Forest National Monument, Arizona, and along Indian Creek in Utah, there are great stone walls literally covered with them.

The figures often can be identified—the sheep, the deer, and the snake are common. Also recognized are symbols of the sun, rain, or a spring of water. But there remain many unanswered questions. As Arthur Woodward, archeologist and historian who perhaps has studied these ancient writings more intensively than anyone in the field, once remarked, "We do not know whether they represent the wisdom of the medicine man or the doodlings of the tribal idiot."

Living Indians can throw but little light on this subject. One of the exceptions to this is at Willow Springs near Tuba City, Arizona. In ancient times the Hopis followed their "Salt Trail" to the Little Colorado River to obtain salt, and Willow Springs was one of their overnight camping places. Members of each Hopi clan, as they came this way, incised their clan symbol on the rocks. For instance, the Corn Clan chiseled a corn stalk—and the many pilgrims who had come this way is evidenced by a long row of cornstalks. The weathering of the glyphs indicates the lapse of time during the long period of these treks to the salt mine. There are Hopis living today who participated in these long walks to obtain salt.



Ruins of the big quartz mill at Cortez.

CORTEZ, NEVADA... population 1

By NELL MURBARGER

BEING THE LAST inhabitant of a ghost town has always seemed to me a lonely sort of life, but Lloyd High doesn't find it so. In his mid-60s, a veteran of the first World War and formerly a rancher in Montana, he moved to Nevada in 1922, eventually turned to mining, and located at Cortez. He lives in a neat little cabin set down in the midst of nut pines and junipers, and bordered by old-fashioned yellow roses and crimson poppies. For recreation he reads good books and magazines, and writes poems which he sets to music.

Sometimes, in the long still evenings, he sits alone in his cabin and strums his guitar, and sings these songs he has written; or he may wind the motor of his old cabinet-style Victrola and spend an entire evening playing nostalgic recordings. Occasionally he has visitors — mostly prospectors seeking some overlooked bonanza; or history fans such as myself.

Not even the current interest in ghost towns has caused a wide path to be beaten to Lloyd's door. The fact that Cortez is 40 miles from the nearest through highway rebuffs casual sightseers. Cortez isn't a highly-touted ghost town. It's a quiet pleasant place, thoroughly adapted to

drowsing and dreaming; a place where mining has been the Be-All and End-All for 96 years.

The history of Cortez began in the winter of 1862-63 when 10 residents of Virginia City pooled their resources —\$4000—and created an exploration fund. They placed this money in the hands of Andrew A. Veatch, a young man characterized by newspapers of that day as "the most expert prospector in the world." Taking with him "not more than eight companions," Veatch was commissioned to search for a rich and hitherto undiscovered mining district, it being agreed that each member of his field party would own equal interest with each of the Virginia City backers in any ground located.

The summer days are just as sunny—the winters just as harsh. But, old Cortez at the foot of Mt. Tenabo does more sleeping than it does shouting, for the mines are closed, the mills are crumbling into ruin, and only one man still calls Cortez his home.

Together with the prescribed aides, the young prospector left for the Reese River country in March, 1863. Failing to find anything to his liking, he led his group north past the new camp of Austin, and pushed on into the virtually unknown lands beyond. Exploring every ridge and ravine, observing every formation, sampling every ledge and outcrop, the party moved carefully through the country. In May, at a point 68 miles northeast of Austin, Veatch discovered veins rich in silver and apparently of great extent.

Laying out Cortez Mining District, the group elected a recorder and hastened to locate 200,000 feet of ground.

First Women Residents

By the end of July, 1863, the Cortez Company had graded a road from the camp to their mountainside mine, erected a blacksmith shop and laid foundations for the necessary buildings. Numerous outsiders arrived to take up ground, and the isolated settlement welcomed its first women residents: Mrs. D. C. Clinton, and Mrs. H. H. Herrick and daughter, of Illinois.

"The women are a great curiosity to the Indians who flock around in large numbers to see the white man's *mahala* with her balloon rig of crinoline," observed the Cortez correspondent in Austin's *Reese River Reveille*.

As soon as initial exploration proved the worth of the new district, the Virginia City backers subscribed another \$6000 to erect a mill, machinery for which was to be freighted over the Sierra Nevada from Sacramento by ox-team. But, due to the geographical and topographical location of Cortez—at a latitude farther north than Denver

and 1000 feet higher in elevation—relatively little could be accomplished at the new camp before the brief summer had sped and winter fastened its fierce grip on the land.

Beginning in November and continuing well into the next spring, all supplies and equipment destined for Cortez or its mines were brought in on pack mule trains loaded in Virginia City and routed by way of Austin—a hazardous 250-mile journey.

With the coming of spring, affairs at Cortez began to move briskly and outside capital entered the picture. "A few days since," reported the *Reveille* on June 6, 1864, "Mr. George Hearst and Dr. Hathaway, gentlemen who have a few hundred thousand at their command, left Austin for a visit to Cortez. . . . They are those who have made great fortunes in mining and know where to invest. . . ."

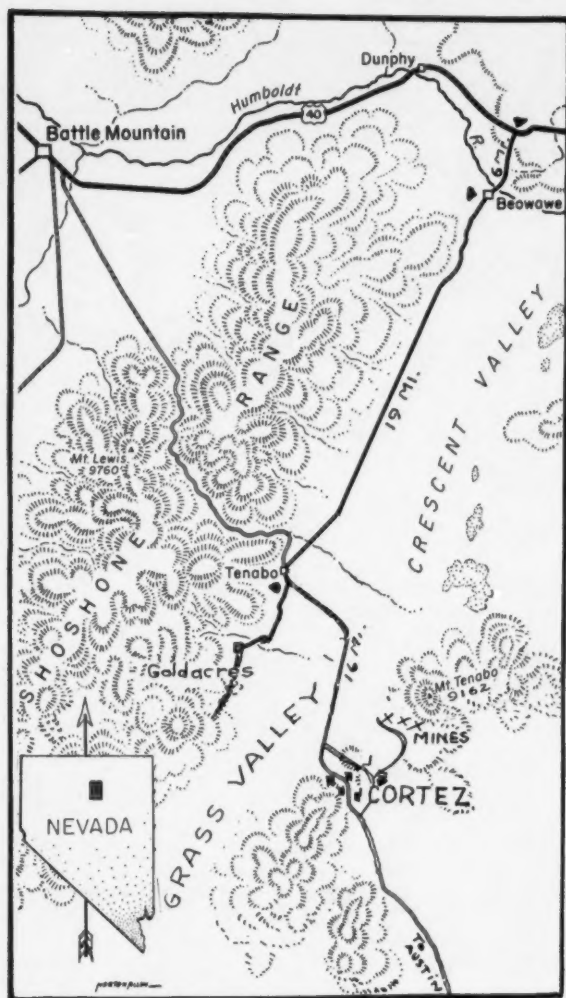
That Hearst liked the prospects at Cortez well enough to back them with hard cash is not surprising, since only good reports were flowing from this new camp. Eulogizing the district, the *Reveille* described ore from the St. Louis, Garrison and Idaho ledges as "a marvel of richness, pieces of several pounds weight being almost pure black sulphurets. Specimens from the St. Louis lode . . . have assayed as high as \$11,000 per ton. . . ."

The Mill Fails

This same month the Cortez Company commenced long-awaited operations at its new mill in Mill Canyon, a few miles to the north. Unfortunately the first run showed that values locked in Cortez ore could not be recovered without the aid of roasting furnaces. With the new mill proven inadequate, Cortez mine owners freighted their ore by mule to the mills at Austin.

Primitive dugout cabin in Cortez' Chinese section.





Lashed by the fierce blizzards of winter, floundering through spring's bottomless mud, and smothered by summer's choking heat and dust, the long pack trains of J. A. Alvarez began moving Cortez' silver treasure across 60 miles of wilderness trail. Shipped at the rate of 17 to 25 tons per trip, depending on trail conditions, most of the ore was delivered to the Keystone Mill in Emigrant Canyon, one-and-one-half miles north of Austin.

A Way of Life

The mule train was a way of life. The entire Cortez economy was geared to pack-saddles, both for freighting ore to outside mills and for bringing in supplies and equipment needed by the mines and the growing town. Therefore, it was a great event when George Russell, in June, 1867, instituted the first stageline service to Cortez. Stages serving the new line left Austin on Monday of each week, and Cortez on Saturday.

Despite the *Reveille's* declaration that prospects at Cortez "were never so bright as at present," George Hearst ended his local connections. By selling his Cortez mining interest to Simeon Wenban, his partner, for \$14,000, Hearst gave Wenban controlling interest in all the main properties on Mt. Tenabo. Thus, Wenban, a native of Kent, England, became the kingpin of Cortez.

In July, 1867, the Wenban Mill went into operation, and the *Reveille* carried frequent notices of bullion in 5000

and 6000-ounce lots being shipped by Russell's Stage to Austin. With completion of the Pacific Railroad through Beowawe, 35 miles to the north, the wealth of the Cortez mines was routed in that direction. The *Reveille* still kept a fatherly eye on the camp, and on September 14, 1869, reported that Wenban & Co., on the next day following, would ship from their mill in Cortez "one ton of silver bullion."

Other shipments, not of such magnitude, followed with comfortable regularity; and when it appeared that good fortune had taken a permanent perch on his shoulder, Simeon Wenban built a great house in Cortez Canyon. It was a mansion by mining camp standards. Not only did it have 22-foot ceilings and spring water piped to kitchen and bath; it boasted that *ne plus ultra* of Nevada mining camps—a green lawn!

Chinese Labor

About this time most of Cortez mine and mill employes were replaced by Chinese coolie labor. This development left Wenban's camp as popular as a leper colony with Occidental workmen and the Nevada press which was solidly against employment of Oriental labor in the state's mines and mills.

Although coolies could be hired for \$40 a month and "board themselves," and Chinese foremen received \$1.60



Lloyd High, last surviving resident of Cortez.

a day (about half the wages then being paid to Mexicans in comparable jobs), this saving was not sufficient inducement to invite the entire state of Nevada's wrath. Wenban's action must have been dictated by more peremptory circumstances, and there is a persistent story that it came as a result of temporary—but acute—financial embarrassment. To raise desperately needed money, he is said to have appealed to a wealthy San Francisco Chinese who agreed to provide the sum required on condition that Wenban employ Chinese labor.

Wenban's Fortune

Be that story true or false—and despite disparaging remarks of the press—Wenban continued to employ Chinese and to ship silver bullion in prodigious quantities, often as much as \$25,000 worth in a single lot. When Wenban died on March 4, 1901, at the age of 76, he left an estate valued at \$567,000. Cortez went on, but never again as profitably.

Various lessees worked the ground until 1919 when the Consolidated Cortez Silver Mines Company bought the property for a reported \$100,000, sold 2,000,000 shares of stock at a dollar a share, and erected a 100-ton concentration and cyanide mill. This mill functioned with moderate success until the early 1930s; but the once-great mines could not weather the blow when Depression years sent the price of silver plunging to 33c an ounce.

The Simeon Wenban mansion had been torn down before I first saw Cortez. The big company office and boarding house, and one of the former saloons were still standing, as were the tall chimney of the big brick-and-stone mill and the silent hulks of two wooden frame mills farther up the canyon. Several dwellings were in usable condition, and about a dozen persons were living in the town.

Every time I visited Cortez in the years that followed,

I found it more dilapidated; but it never looked too much different until last summer when I was grieved to see that the fine mill chimney had been torn down for the bricks it contained, and the huge company boarding house had been razed for its lumber. Where the building had stood were a few floor joists, an old poker table, a big office desk lacking most of its drawers — and rubble without end. Scattered over the ground were great numbers of square-cut iron nails.

From the old boarding house site I followed a pair of dusty wheel tracks that wound off through the nut pines and junipers to the cabin of my friend, Lloyd High, the last surviving resident of the old camp.

Together, we visited the old kiln where lime rock was burned for use in fluxing the silver ore. It was an interesting structure, built in beehive form out of rubble stone, about 25 feet across in its greatest diameter and 15 feet in height. Down in the gully, about 40 feet below the kiln, Lloyd called my attention to three wooden barrels half-filled with lime produced in the crude old oven—lime as fine and white as talcum powder.

Grass Valley Salt

Then he pointed to a pile of hard grayish material. "This is salt from the marsh near the Grass Valley Ranch. Evaporation would leave it on the surface, and Indian women swept it together in piles. Then it was packed up here on muleback for use in fluxing the ore."

As we started back, groping through head-high sagebrush, and side-stepping old cellar holes, we were never out of sight of the evidence of man's presence. Grown over by the sage were the remains of hand riveted sheet-iron stoves, heavy plank chairs, rusted coal scuttles, bits of purple glass, battered dinner buckets and powder cans

MAY

Enter the warm season. Community events on the lower desert regions taper off, the center of activity shifts to the high plateau and mountain regions . . . the turtles race at Joshua Tree, Calif., in May . . . Las Vegas, Nev., has its Hellsdorado . . . and as a fitting warm-weather touch, the folks at Provo, Utah, stage a boat regatta. And for you who plan summer vacations to the "cool" regions, remember: no portion of New Mexico is below 2800 feet altitude (lowest point in the state is the Red Bluff Reservoir).

ARIZONA

- April 25-May 17 — 24th Annual Junior Indian Art Exhibit, Museum of Northern Arizona, Flagstaff.
- April 28-May 1—Las Damas Trek, Wickenburg.
- May 1—Annual Reunion and Picnic, Gila Valley Old Settlers' Union, Buckeye.
- May 2-5—Cinco de Mayo (Mexican Independence Day) Festivities at Nogales, Gilbert and most other border communities.
- May 3—Inboard Colorado River Regatta, Parker.
- May 4-24—Independent Sculpture Show, Art Center, Tucson.
- May 9-17 — Valley Home Show, State Fairgrounds, Phoenix.
- May 26 — Arizona State College Rodeo, Flagstaff.

CALIFORNIA

- May 2-3 — 14th Annual National Turtle Races, Joshua Tree.
- May 8-10 — Grubstake Days and Parade, Yucca Valley.
- May 9-10 — Sierra Club Desert Peaks Section climb of Mt. Keynot near Lone Pine.
- May 9-10, 30-31—Sierra Club rock climb of Tahquitz Rock, near Idyllwild.

- May 9-15—Barstow to Las Vegas (Nev.) horseback ride. For information contact Ed Andrews, c/o Barstow Chamber of Commerce.
- May 9-24 — Annual Wildflower Show, Julian.
- May 16-17 — Annual Fiesta, San Jacinto.
- May 17—Pageant, Spanish Fiesta and Wild West Show, Placerita Canyon Park near Newhall.
- May 23-24 — 18th Annual Stampede, Lone Pine.
- May 29-30—Spanish Fiesta, Morongo Valley.

NEVADA

- May 7—Community Music Festival, Sparks.
- May 15-17—Hellsdorado Days and Rodeo, Las Vegas.
- May 29-31—Second Annual Five State Sports Car Jamboree and Rally, Humboldt.
- May 29-31—Nevada State Rodeo, Winnemucca.
- May 31—Homecoming Day, Caliente.

NEW MEXICO

- May 1—Fiesta and Spring Corn Dance, San Felipe Pueblo.
- May 3—Corn Dance, Taos Pueblo.

- May 15—San Ysidro Processions and blessing of fields in northern New Mexico rural villages.
- May 26—Fiesta of San Felipe de Neri, Albuquerque.
- May 30 — 23rd Annual White Sands National Monument Playday, Alamogordo.

UTAH

- May 6-9—State Junior Livestock Show, Spanish Fork.
- May 8-10—Uranium Symposium, Moab.
- May 9—Re-enactment of Golden Spike Ceremony, Promontory; dedication of Railroad Museum, Corinne.
- May 11-16 — American Legion Carnival, Vernal.
- May 15-16 — 44th Annual Black and White Days, Richmond.
- May 16 — 4th Annual Horseshoe Tourney, Utah State Prison, Draper.
- May 16-17 — 196-mile Trial Run, Canyon Country River Marathon, Green River to Moab.
- May 22-23—Sanpete Rambouillet Days, stock judging and show, Ephraim.
- May 30—Homecoming, Beaver.
- May 30 — Annual Boat Regatta on Utah Lake, Provo.



Mining company office and boarding house in Cortez recently was torn down to salvage building materials.

—even the broken head of a tiny Dresden doll, its cheeks still glowing apple-blossom pink, its painted hair shining jet. With man almost as transitory as the desert wind, it seems strange that some of his lesser works should be so enduring.

From the millsite we climbed a steep rock grade to No. 1 Tunnel. Near its portal stood a few wooden buildings including the old machine shop, blacksmith shop and boarding house. We continued afoot along the canyon side to a small cluster of crude tumbled-down rock-faced dug-outs. Here was where Wenban's Chinese miners had lived. Searching the sorry hovels we found pieces of broken dishes and scraps of other materials of Asian origin.

"This was only a small suburb," said Lloyd. "The main part of Chinatown is buried under 75,000 tons of mill tailings . . ."

The great mass of mill residue sprawls over the desert like a lazy yellow cat asleep on a rug. Beyond the tailings I could see the upper end of Grass Valley—long, wide and empty. Beyond the valley looms the canyon-laced breast of the high Toiyabes. In all this vast portion of the world open to our view I could not glimpse one plume of curling smoke, one moving vehicle.

Much Activity

"Wish I could have seen this camp in Wenban's day," Lloyd was saying. "From what old-timers tell me it was a busy place. Besides big crews employed in mining and milling, the folks here made all their own brick from a clay deposit about seven miles southwest of here. You saw where they made their lime. The marsh supplied salt, and all the hills for miles around were full of woodcutters

and charcoal burners. They worked 200 head of horses and pack mules. It's hard to imagine the amount of work that has been done here. This whole mountain is honeycombed with tunnels, stopes and inclines—35 miles of them, altogether. The Polar tunnel alone cost \$350,000."

We took a side road to the cemetery. When I remarked that it was unusually clean and well-kept for a ghost town graveyard, my companion admitted that he and Louis Rossi had "sorta fixed it up" the previous spring.

Tribute to Pioneers

"We grubbed out the sagebrush and bunch grass, straightened some of the markers and did some cementing. Then, on Memorial Day, quite a few families came to decorate the graves of their people, and the place looked real nice . . . but it ought to be fenced. If I could get the county or someone to buy the wire, I'd donate the juniper posts—and I'd help put the fence in, too . . ."

Lloyd and I had supper together that evening. Afterward, he got out his old guitar and sang and played a few songs, and we talked a while longer; then I said I'd have to be leaving.

As I started down the dusty trail, I looked back to see my ghost town friend standing in the open doorway, the yellow lamplight spilling over him and across the yard. Except for the groping headlights of my car and the winking stars in the dark sky, that friendly glow from Lloyd's cabin door was the only gleam of light I could see in Cortez, and from the top of Mt. Tenabo to the highest summits of the sleeping Toiyabes.—END



THE DESERT BEAN TREE

By EDMUND C. JAEGER, D.Sc.
Curator of Plants
Riverside Municipal Museum

CAME EARLY April and three of us hied ourselves away from town cares to the mesquite and ironwood thickets of the big entering washes and bordering lowlands of the lower Colorado River.

It was the first visit to the desert

for the two high school lads I had with me, and they were all ears and eyes to hear, see and learn all about the new things around them.

We heard the charming, sweet and spirited morning and evening songs of the crissal thrasher (*Toxostoma dor-*

sale), that handsome yellow-gray sickle-beaked yellow-eyed bird so much wed to the mesquite tangles. Here, too, we heard and saw the large cinnamon-brown Abert towhee (*Pipilo aberti*), equally given to frequenting and nesting in the mesquite country.

I explained to my young companions that while the birds we saw were confined to southwestern United States and northwestern Mexico, the mesquite trees in which they oftentimes live are widely spread in semi-tropical and tropical areas from extreme southern Utah and Kansas to the West Indies, Chile and Argentina, the Philippines and Hawaii.

Our honey mesquite (*Prosopis juliflora*) is a very tough drouth-resistant tree. Water it always needs, and it does not hesitate to go far to get it—even 50 to 60 feet down when necessary. Under severe desert conditions such as those found at Death Valley, mesquite may be a low shrub, only three to eight, or at most 10 feet tall; but where water is more plentiful, it may be a very sizable tree attaining a height of 50 to 60 feet. Such giant mesquites, generally of quite upright form, are prominent in fields and along streams of the west coast of Mexico.

When mesquite inhabits areas of light powdery clays or sands, it often collects great quantities of wind-blown soil in its crabbed branches. As the sand or clay builds higher and higher, the branches sprout upward ahead of it to enjoy the friendly sun, and in time isolated rounded hillocks are formed. Sometimes these knolls are of large size, 10 to 15 feet high and 15 to 25 feet across. They are picturesque and characteristic features of desert plains.

One of the most remarkable things about the mesquite tree is the enormous development of its root system. The roots not only have an unusually great spread and length, they get very large, often in inverse proportion to the tree parts above ground. This is especially true of mesquites developing in dunes. It was once an old saying among desert folks that if you wanted a lot of good sizable wood from a mesquite, you had to mine for it underground.

Behind the tree's often thorny exterior is a kindly heart which has proven a godsend in many an arid land by giving shade, shelter and food for birds and mammals. Its green leaves often are the chief source of fodder for hungry cattle and horses, and its pendent clusters of long cylindrical beans have furnished additional food. From ancient times mesquite has ranked with the prickly pear as

the most dependable source of food for Indians and, more recently, the poorer classes of Mexico. Even in the drier years there are abundant blossoms and fruit, and thus the tree is an unusual hedge against starvation when other foods are inadequate or fail altogether.

The mesquite is important to numerous insects. A great host of solitary wild bees as well as the social honey bees take nectar from the flowers. Mesquite honey is of unusually fine quality and flavor, and the amount produced is very large. During the night uncountable moths hover over the sweet catkins of flowers, and, in turn, come numerous bats to greedily feed upon the moths.

During the two nights the lads and I camped in our Colorado River mesquite thicket, we were kept awake by the wood rats (*Neotoma*) which ran hither and yon over the crooked branches, and with chittering of teeth gnawed off twigs to take to their nests on the ground below. A Chemehuevi Indian boy we met said that in summer he is always afraid to wander among the mesquite bushes because big rattlesnakes are so often found there, doubtlessly attracted by the rodent food supply.

We found plenty of evidence that coyotes are fond of mesquite beans. Frequently their droppings were largely made up of undigested dried husks and hard seeds.

Indirectly, that trim-feathered black

bird aristocrat, the phainopepla, is much dependent on the mesquite, for on this plant grows the great clusters of leafless mistletoe whose pink pearly berries supply the bird with one of its chief foods. The phainopepla is largely responsible for the spread of the semi-parasitic mistletoe. The mistletoe seeds pass through the bird's digestive tract and are deposited on other trees in places favorable for germination and growth.

Honey mesquite loses its leaves with the onset of frost. But when spring

The mesquite, with its widely spreading roots and branches, its nutritious foliage, its nectar-bearing flowers and nourishing fruit, provides a whole series of interesting and beneficial relationships with others of the natural world—including man.

days come, the barren thorny twigs put forth new lacy leaves of liveliest green, hardly less beautiful than the pendent catkins of sweet-smelling flowers which soon follow. This is the time when grazing animals most eagerly feed upon mesquite.

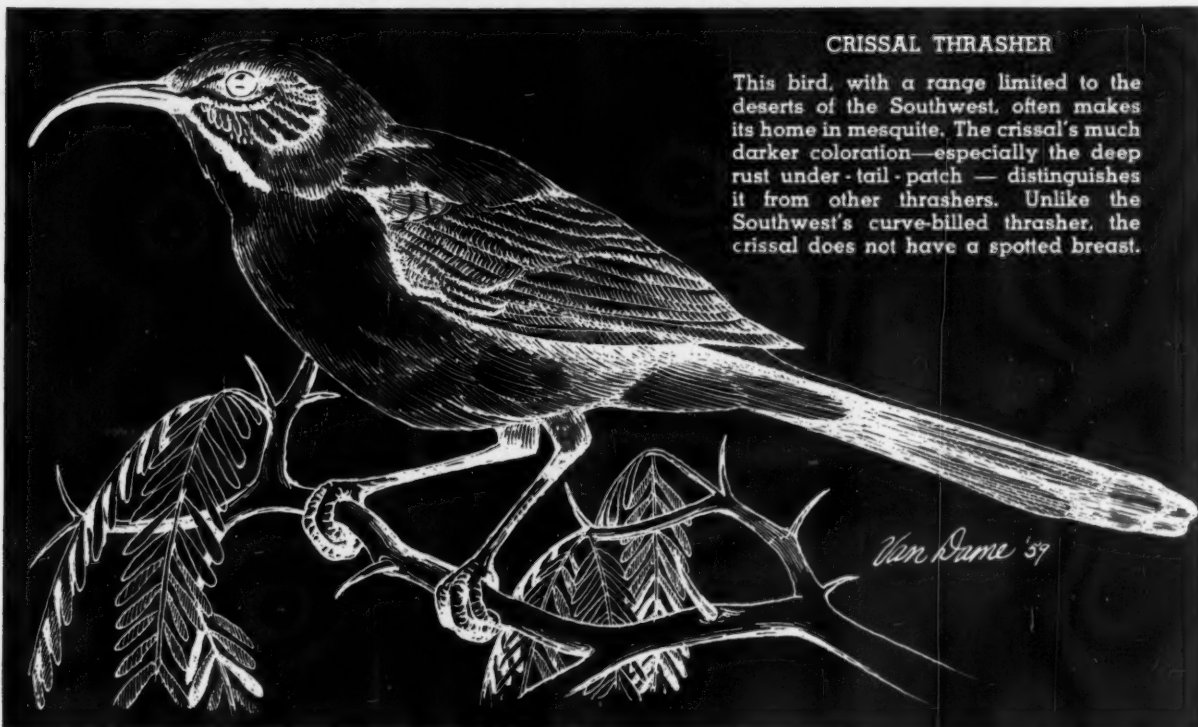
The catkins of creamy yellow flowers appear from April to June, and the beans mature in September and October. Occasionally in warm areas

another crop of blossoms are produced in early winter, giving a good harvest of ripe beans in June or July.

The seed vessels, hanging like so many four-to-eight-inch-long string beans in bunches of two to eight, often are so plentiful they are more conspicuous than the tree that bears them. At first they are green in color, but turn at maturity to a lovely tan.

The ripe beans are high in grape-sugar content (up to 25 percent); the protein likewise is considerable. The sugar is found mostly in the spongy pulp in which the hard seeds are embedded; the protein mostly in the seeds themselves. I often have seen Cahuilla Indian women grind the dry beans in a deep half-buried mortar of mesquite wood. After the husks and hard seeds were removed, there remained a flour which, boiled in water, made a thick paste. From this a cake was made and either dried in the sun or baked. Sometimes the Indians soaked the flour in water to make *atole*, a gruel-like sweet drink. If the infusion was allowed to ferment it resulted in an intoxicating drink of considerable alcoholic content.

The Mohave Indians also crushed the beans with a long stone pestle in a wooden mortar. The hard seeds, when sorted out, were swallowed whole along with the moistened flour, leaving the tough Indian stomach to digest them as best it could. Large jar-shaped cakes were made from the flour. After baking, they were so hard



CRISSAL THRASHER

This bird, with a range limited to the deserts of the Southwest, often makes its home in mesquite. The crissal's much darker coloration—especially the deep rust under-tail-patch—distinguishes it from other thrashers. Unlike the Southwest's curve-billed thrasher, the crissal does not have a spotted breast.

Van Dine '39

they had to be cracked with a stone.

First mention of the mesquite was made by Cabeza de Vaca, the first white man to cross the American continent (1527-1536). He came in contact with friendly Indians in the south of Texas, at a place somewhat distant from the Gulf of Mexico. In his journal he wrote:

"We went (with them) to their homes and were very well received. They brought us their children to touch and gave us much *mezquite*-meal. This *mesquitez* is a fruit which, while on the tree, is very bitter and like the carob bean. It is eaten with earth and then becomes sweet and very palatable. The way they prepare it is to dig a hole in the ground of the depth it suits them, and after the fruit is put in that hole, with a piece of wood the thickness of a leg and one and one-half fathoms long, they pound it to a meal, and to the earth that mixes with it in the hole, they add several handfuls, and pound again for a while. After that they empty it into a vessel, like a small round basket, and pour in enough water to cover it fully, so that there is water on top. Then the man who has done the pounding tastes it, and if it appears to him not sweet enough he calls for more earth to add, and this he does until it suits his taste. Then all squat around and each takes as much as he can. Those who take part in the banquet, which is for them a great occasion, get very big bellies from the earth and water they swallow."

About 70,000,000 acres in the Southwest are now occupied by mesquite thickets—almost double the area covered only half a century ago. This phenomenal spread, in spite of many years of drouth, is mostly due to wandering cattle which eagerly eat the mesquite beans even when other food is available. Up to 80 percent of the hard-coated seeds pass unharmed through the animals' bodies, ready to germinate where they fall. The seeds remain viable a long time. Germination has been reported after 44 years! As mesquite spreads along the cattle trails it crowds out the perennial grasses so much valued as forage by the stockmen. Once established, mesquite is hard to eradicate.

Mesquite control in cattle country, especially in Texas, is a real problem. Young plants can be grubbed out, but

the older trees forming heavy stands must be killed by chemical spray or by having drug over them big anchor chains (300 to 500 feet long, with links which weigh up to 30 pounds apiece) strung between two tractors working parallel to one another. The chain is pulled once forward, once backward over the area—literally pulling the trees out by the roots. The wood, when dry, is gathered in piles and burned.

In rough rocky country dense stands of mesquite often are eradi-

much grass and trees that grow the screw" — the screw bean mesquite (*Prosopis pubescens*). He doubtlessly had seen this small tree a number of times before on his travels because, while not as plentiful as its big brother, the honey mesquite, the screw bean mesquite does grow in many places from the Rio Grande to California and southward into northern Mexico.

Its bean, peculiarly coiled into a tight and handsome little cylinder one to one and one-half inches long, suggested to the Spaniards the name, *tornillo* ("little screw").

In places of continually moist soils, such as the bottom lands along streams, the screw bean mesquite may grow an upright trunk three to 10 inches through and up to 25 feet high. There is a strong tendency for the trunk to be quite straight, and this has made it possible to use the wood for roof beams and uprights in the building of shelters.

On the bottom lands of the Mojave River near old Camp Cady there were several old cabins the pioneers had constructed from screw bean logs. These shelters were surprisingly well preserved.

The brownish-barked narrow-crowned screw bean usually grows in dense thickets. Due to a covering of felty hairs on the young branches and the stout almost-white stipular spines, the upper parts of the trees have an ash-gray appearance.

Like the beans of the honey mesquite, the peculiar screw beans hang in bunches. They have a high sugar content, and the flour made from them is boiled down to make a molasses of sorts. When using the beans for food, the Indians ground the whole pod, weevil-infested seeds and all. Cakes were made from the flour, and a beverage from the meal soaked in water.

The leaves, consisting of from five to eight pairs of leaflets, are too small to be of much forage value, but cattle, horses and donkeys readily pick off the clusters of brown beans or eat those that have fallen to the ground.

The wood is very satisfactory campfire fuel, and stripped of its bark to discourage boring beetle larvae, makes good fence posts.

The screw bean was first described in botanical literature by Thomas Coulter, the Irish botanist for whom the Coulter pine is named.—END



Components of mesquite (left) and screw bean.

cated by spraying poisons from the air. In Texas the controlling of mesquite is a big, expensive and continuous project.

When Friar Francisco Garces came to the flow of water in the lower Mojave River (Cave Canyon) in 1766, he found a place "where it has cottonwood, much grass and lagunas."

Next day Garces journeyed to an Indian village of about 25 souls. Finding the naked wretches had nothing to eat but roots of rushes, he gave of his meager stores and they, in turn, offered their roots of tules. Here, he wrote, "grows wild grape, there is



First Lady of Santa Clara

By MARY BRANHAM

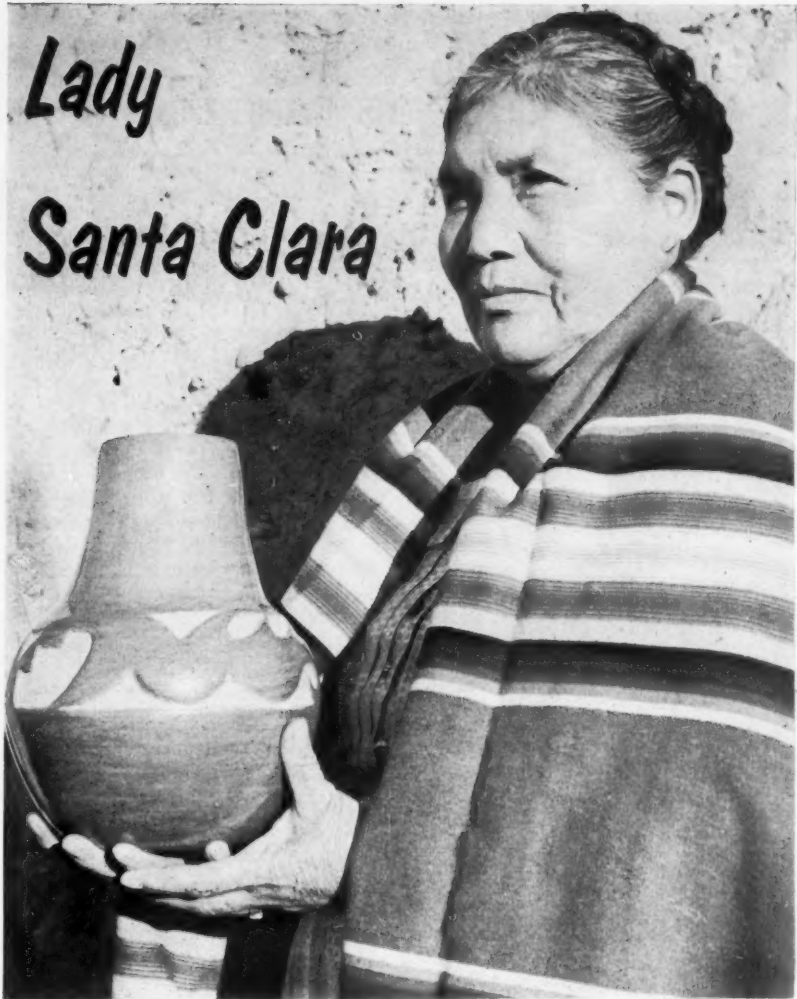
THE FIRST time I saw Gregorita Chavarria she was grinding corn on a stone metate, as the women in her family have done for a thousand years. The second time I saw her she was a guest at a D.A.R. convention where her husband, Governor Juan Chavarria of Santa Clara Pueblo, was a speaker. After having been five times first lady of her pueblo, Mrs. Chavarria is accustomed to a great variety of experiences, both modern and traditional. While she has worked enthusiastically with her husband to bring electricity, telephones and television to Santa Clara she also is working to help preserve the culture of her people, for like all pueblo villagers, she is justly proud of her heritage.

The Indians who live in Santa Clara, just west of busy Highway 285 in northern New Mexico, trace their ancestral home to the cliff dwelling at Puye, 12 miles west of the present settlement. When Coronado rode into the Southwest in 1540, Puye was in its heyday. Recent excavations of the cliff houses and surface ruins give evidence of a highly developed civilization.

By the time the Spaniard, Don Juan de Onate, moved northward in 1598, the Puye people had moved to their present site on the banks of the Rio Grande. Their village, K'hapoo "where the water grows under," is one of the first pueblos to be mentioned after the Spanish occupation. A Franciscan missionary was assigned to K'hapoo in September, 1598, and in a quarter of a century a church had been built and the village name changed to Santa Clara.

Inauguration Day

The same year that the Mayflower touched an eastern shore, the King of Spain issued a Royal Decree requiring each pueblo to choose a governor, lieutenant governor and other officials at the end of the calendar year, and to have an inauguration and other ceremonies during the first week of the new year. The Indians accepted



Gregorita Chavarria of Santa Clara Pueblo is an expert potter.

Twelfth Night, or as they call it, "The Day of the Three Kings," as their day of inauguration, and since then their dances and inaugural ceremonies have taken place on January 6. A silver-headed cane was given to each pueblo governor as a symbol of his commission and authority.

New Canes

When Mexico won her independence from Spain, new canes with silver heads were presented to the villages. President Lincoln honored the peace-loving Pueblo Indians with 19 ebony canes with silver heads inscribed with each pueblo name and "1863 — A. Lincoln, Pres. U.S.A."

Five times Juan Chavarria has accepted the responsibility that goes with the canes, and five times Gregorita has been first lady. It is an honor that she accepts graciously, though she occasionally complains that the governor's constituents have no sense of time

—the telephone summons her husband to cope with community problems more often at two in the morning than at two in the afternoon.

A first lady's schedule is almost as crowded as a governor's. After Mrs. Chavarria has given a kitchen shower in the morning for a Santa Clara girl who is marrying a boy from a nearby pueblo, she may find herself teaching her weekly catechism class at the Day School in the afternoon, and appearing on television in the evening to help promote the Puye Ceremonials.

Festivities

The first Ceremonial was held in 1957—after 400 years the Santa Clara people returned to their ancestral home to have dances and traditional ceremonies. I was one of the hundreds of visitors who drove up the winding road to the beautiful mesa in the heart of the Jemez Mountains to see the dances and look at displays

To Gregorita Chavarria, wife of a Santa Clara Pueblo leader, life is an interesting combination of the modern world of today, and yesterday's ancient, traditional ways.

of the famous black Santa Clara pottery. Mrs. Chavarria, herself a prize-winning pottery-maker, was busy all morning at a pottery booth. In the afternoon she helped her daughters Philomena and Melinda get into their dance costumes. This year the colorful Puye event takes place on August 15-16.

For his outstanding work in organizing the Ceremonials, the Espanola Valley Chamber of Commerce voted Governor Chavarria the Man of the Year in 1957. To entertain the Chamber officers and their wives, Mrs. Chavarria decided to "make a little feast."

A pueblo woman places bread in an earthen outdoor oven.



For this party she baked traditional pueblo bread in an outdoor oven, and made the green chili for which she is locally famous. Fifty pounds of flour and four pounds of lard were used for the bread. It is not at all unusual for the first lady to bake dozens of loaves of bread in her outdoor oven every week. She showed me how the oven is preheated with hot coals and then tested with corn husks. If the corn husks scorch, the oven is too hot and must be cooled with wet cloths.

Last year when Philomena was a senior at Haskell College in Kansas, her mother sent a loaf of bread each week by air express. Now Richard, who is studying in Chicago, Melinda, in college in Indiana, and Pedro, working in Albuquerque, must all have home-baked bread. Tony, in Formosa with the Navy, is too far away for economical bread delivery. The younger boys, enrolled at St. Catherine's in Santa Fe, must come home for mother's bread.

The Chavarrias traditionally make a feast at Thanksgiving, and last year I was invited. The turkey was superb, and I ate far too much cranberry sauce, as I always do, but it was the green chili that I just couldn't resist. Later, while helping the first lady wash the dishes, she gave me this recipe. When Mrs. Chavarria makes green chili for the family, she uses one-and-a-half pounds of ground beef. As the beef is browning, she adds one chopped onion and enough water to cover the meat. To this she adds two small containers of frozen green chili. The secret of good chili, she assures me, is to let it simmer very slowly for at least an hour-and-a-half. This family-size recipe will serve six or eight persons.

Santa Clara's first lady is especially well known for the handsome pottery lamps she designs and makes. Recently she and her husband were invited to become one of the attractions at Disneyland. Mrs. Chavarria was told that she would become world famous as a potter if she made the California move. But, the Chavarrias decided against it.

"We'd rather stay at the pueblo with our people," Gregorita said with a twinkle in her bright eyes. "Besides," she added, "I don't care about being world-famous—I just want to make good pottery."—END

DESERT MAGAZINE'S



We welcome your contributions to this column. For recipes accepted for publication, we will pay \$2. Please limit to Mexican, barbecue or camp-out dishes. Send recipes and return postage to Recipes, Desert Magazine, Palm Desert, California.

STUFFED MEXICAN STEAK

1½ pounds flank steak
Salt and pepper to taste
3 tablespoons margarine,
butter or shortening
Chili stuffing (see below)

Score meat on both sides. Spread chili stuffing on steak (to avoid messy appearance, do not spread to sides). Roll up steak as you would a jelly roll. Tie, then sprinkle with salt and pepper. Melt shortening in roasting pan. Brown steak. Add enough water to keep it from sticking, and simmer for 2 hours, replenishing water when necessary (first 1½ hours with cover; last ½ hour or until well browned, uncovered).

CHILI STUFFING

2 cups bread crumbs
2 tablespoons melted
margarine or butter
1 tablespoon chili powder
2 chopped green peppers
1 chopped onion
½ teaspoon salt
pepper to taste
1 cup tomatoes or tomato
sauce

Stir melted margarine or butter into bread crumbs; mix in other ingredients.—John Martin, Santa Fe.



An Army wife leaves the comforts of the East to join her husband in a dusty border town during the Villa Punitive Campaign—and gains new perspective of the world—and of herself.

Memories of Broad Horizons . . .

By SUSAN WILSHIRE JORDAN

UNTIL THAT fateful night in March, 1916, when Pancho Villa made his infamous raid on Columbus, New Mexico, I had never heard of that mere dot on the map.

At that time my husband, Jimmy, was a Captain of Infantry. I was too new in the army to accept with fortitude the order that was to take him into Mexico on the futile punitive expedition to capture Villa. It was our first separation.

After five months, which I spent with my parents, Jimmy was returned to Columbus. He wrote that Columbus was an ugly dusty whistle-stop on the desert; that wives were not encouraged to come—there being no adequate quarters—but that he had found a room over a feed and grain store—just in case . . .

I took the first train. I knew nothing of the desert, and less about roughing it; I was city bred. We had recently left the beautiful colonial quarters of Washington Barracks, where lawns reached to the Potomac, and where the social life was gay, but formal—dances at the White House, full dress uniforms, clanking swords and impressive parades.

Jimmy met me in El Paso, and soon we were bumping over dirt roads that twisted in and out among shrubbery that drooped in the heat. The few shacks we passed seemed forlorn and lonely; the air was grimy with dust.

"It's a far cry from Washington," said Jimmy sympathetically.

"Yes," I nodded, but as I looked across the vast sweep of land that stretched to the distant hills I was pleasantly aware of space. All my life I had been boxed in by buildings.

"I feel as if I had escaped into a boundless world," I said.

Jimmy smiled. "Wait until you reach the room over the feed and grain store," he said.

"Is it awful?"

"Pretty drab."

It was a dreary room. Even under my new spell of enchantment, I found it musty and bare.

The commanding officer and his wife brought warmth to our first evening by asking us to dinner. They were living in a house that had been a grocery store before the raid. Its flat front was pocked with bullet holes left by Villa's soldiers. But, the major's wife had brought to it a charm, a hospitality and the easy adjustment to army life that made me return to our humble room glad, at least, for its shelter.

Luckily we did not have to stay there long. After two weeks, Jimmy secured a large 16x16 army tent; a real luxury! Our new home stood well away from the camp on a sandy stretch of desert filled with low mesquite. It had a wooden floor and wainscoting, with side flaps that could be lowered against the rain. Crates were fashioned into dressers, rugs made in Mexico covered the floor, chintz and odds and ends were gathered from here and there to give the tent a gala air.

Jimmy had the use of army showers, and I adapted myself to a large galvanized tub. A "Please Do Not Disturb" card went on the door when the tub was in use; otherwise, it was hidden under the bed.

To the east were the hastily built army headquarters shacks, but to the west the desert stretched to the distant mountains where the peaks of the Tres Hermanas (Three Sisters) rose in high splendor. Those Sisters became real companions, sharing their moods and their colorful change of costumes with me—rosy pink in the morning, drab gray by day, velvety blue, purple and crimson at twilight.

We army wives never lacked for entertainment. We got together to watch the morning train steam into the mustard colored station with the ever-welcome mail; we watched the trucks weave away in long caravans carrying the provisions, mail, news, clothing and ammunition for the troops of the punitive expedition.

There were a few little shops, one or two hash houses, a movie theatre that occasionally tempted us with its flickering films. Later a hotel was built.

But, the great and ever-changing attraction was the desert itself—it gave me the odd elation of being a new person, as if some inhibited streak in my nature had been released. At first I thought it was the joy of being with Jimmy that colored my contentment, but it was something more than that. Sophistication, I realized, was a veneer covering emotions that added flavor to every unexpected happening.

Picnics in the Las Floritas Mountains were a delight. In the sheltered canyons dwarf lupines and wild blue penstemons nestled among the rocks. The long walks Jimmy and I took in the cool of the afternoons were exciting. In the desert, heady with the scent of sage, cottontails scampered before us, lizards scurried for the protection of the brush, horned toads watched us through half-opened eyes, and meadowlarks saluted with their secret calls.

The hardships of the soldiers in Mexico made us all the more appreciative of our every blessing—the tranquil lazy days, with time to read, time to write, time to understand better the contrasts of Nature—a more willing acceptance of the bitter with the sweet.

When orders came for Jimmy to return to Mexico, I needed all the strength I had absorbed. But mingled now with my heartache was a new philosophy, a new understanding of the vast desert he was going into. I knew his dull moments would be colored by the sunsets, the torpid days freshened by unexpected rains, the weary evenings soothed by the cadence of crickets singing in the night, his hardships accepted willingly because of duties fulfilled.

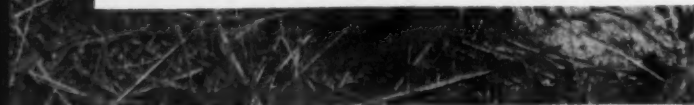
It was I who was leaving the desert to return to narrowed horizons. But I knew, too, that I had found a sanctuary into which I could escape—not only into the desert, but into realms within myself. I knew also that my own lonely days would be gladdened by the memories of a never-to-be-forgotten idyl.—END



"I don't know of a single natural thing which, if you just become conscious of it, is not fascinating."

This was Jerry Laudermilk's creed. Author of over 30 feature stories for *Desert Magazine* between 1940 and his death in 1956, Laudermilk's ability to humanize, dramatize and make popular and understandable scientific aspects of the natural—and particularly the desert—world was the rare quality that set him apart from most other scientists who attempt to write for the lay reader.

The previously unpublished Laudermilk feature on these pages is a case in point.



Lichens busy helping to weather a granite boulder.

GREEN CONQUEST

how plants eat rocks

By JERRY LAUDERMILK

ON ALL SIDES and underfoot, night and day, summer and winter, Nature carries on one of the most important transformations that takes place on the face of the earth. This is the never-finished job of rock disintegration wherein the hardest stone is gradually broken down to gravel, sand and, finally, soil.

For the most part, although tremendous forces are active, these changes are subtle and the work goes on in silence. Dramatic changes in Nature's scene-shifting, such as the roar of a landslide or the sullen rumble of boulders in a flash-flood, are rare. Any sound that does accompany the orderly work is apt to be on a small scale: the rattle of pebbles in a pint-sized avalanche trickling down a sandbank; the furtive tinkle as a chip, weathered from an outcrop, drops to the ground.

There are many forces that help break the rocks to

pieces: heat, cold, oxidation, hydration and solution by both water and acid. Also, there are the strictly mechanical agents—the whetting away of boulders by wind-blown sand or the slow grinding of sliding fault walls which smear the hardest rock into powder.

But, the most important force by far is the work of plants. Living or dead, plants are the chief soil makers.

Old Landmarks

That plants actually digest rocks is one of those staggering facts most folks take in their mental stride without investigating the fine points. Once in a long time your morning paper may devote a nostalgic column or two about some old landmark which is being sabotaged by the swelling roots of an old tree or the clinging fingers of a rampant vine. Such cases are like smoke pouring from a factory smokestack—nuisance phases of necessary work going on below.

Any plant may be active in this work of weathering, but lichens—those extraordinary duplex partnerships of fungus and alga living together like a single individual—actually "eat" rocks.

The tremendously effective agent the plants bring into action for this work is the same stuff that puts snap into effervescent drinks—*carbonic acid*—a solution of carbon dioxide in water. Just how this solvent is secreted by plants, and how it works in this world-wide chemical reaction, are subjects tied up with the natures of both plants and rocks themselves.

Consider the plant side of the problem first: The flora that get in the most telling strokes are the so-called higher plants (grass, shrubs and trees) that make their own food materials directly from the raw stuff: water and carbon dioxide (from the exhaled breath of animals and other sources).

Root Hairs

To live, plants also must have certain mineral salts, and before these can be absorbed they must be dissolved out of the rocks. This is the work of specialized plant cells, the root hairs. These cells constantly secrete carbon dioxide which dissolves in the soil-water and attacks the rock particles to free compounds of potash, lime, magnesium and other mineral substances plants demand.

The second way plants build up the acid content of the soil-water is by decay of their dead tissues. Decomposition bacteria require previously elaborated compounds of once-living tissue as food-stuff. These are broken down into simpler substances by the action of the extremely potent enzymes secreted by the living bacteria. As a by-product of the decay reactions—which must take place in a liberal supply of oxygen—carbon dioxide is produced in abundance. So, however you look at the proposition, plants, live ones or dead ones, are tremendously important sources of acid for rock erosion.

Now for the rock side of the reaction: Rocks are more or less massive associations of mineral crystals or particles. Sometimes they are extremely hard (granite, basalt) or very soft (shale, chalk). Minerals themselves are chemical compounds.

Raw Materials

In the earth's crust, the two most abundant raw materials are oxygen and silicon. Wedded chemically in proportions of one atom of silicon to two of oxygen the product is some form of the exceedingly common mineral, quartz.

Vast amounts of pure quartz occur, but more is locked up chemically as silica in the many silicate minerals. Of these the most common is feldspar, a compound of silicon, oxygen and an alkali such as soda or potash, or sometimes an alkaline earth such as lime.

Granite, an aggregate of intergrown quartz and feldspar crystals, is the most abundant rock in the earth's crust. Dig deeply enough anywhere and you eventually will come to granite. Pure quartz from granite or any other source resists weathering completely, although associated minerals may be vigorously attacked. This sometimes produces remarkable effects. On some of the mountain rockslides in Southern California, lichens have dissolved the feldspar crystals from rock surfaces, but the quartz is untouched. Cobbles and boulders have acquired "suede" finish which glitters in the sunlight like frost.

So, alone quartz is durable, but when it has combined with other elements to make a silicate mineral, it's a different story. Once its chemical partner deserts it, as when the alkali of a feldspar departs to become an alkaline carbonate, the silica that remains behind can be dissolved by more concentrated alkaline carbonate solutions, sometimes from the very feldspar that has turned traitor against the parent rock mass.

Action of Yucca

What takes place when a plant sets its root system firmly in an outcrop? I am reminded of a particular yucca on the Mojave Desert which is flourishing on a pegmatite rock mass. Pegmatite is a form of granite typified by having a very coarse texture—always a disadvantage from a rock's standpoint since the interfaces where crystals meet act as seepways for water.

A tremendous amount of weathering has taken place in this outcrop since I first made its acquaintance 25 years ago. The yucca was five years old on my last visit, and during its short lifetime, rock disintegration has been accelerated by chemical action and by the mechanical effect of roots forcing their way into cracks and joints. Adjoining faces of cracked slabs show mats of fine rootlets embedded in waxlike clay from decomposition of the feldspar by root acid (carbonic acid). Nearby, old roots have probed 22 feet deep, and can be dug out of joints filled with the same waxy clay.

When granite weathers, not all the feldspar decomposes at once or in the same place. The finest soil in arid or semi-arid regions shows feldspar grains which are kaolinized on their surfaces but sound inside. This is an important factor in agriculture. Some crops consume potash and other salts faster than their acids can dissolve it out of the soil particles, and the land becomes exhausted. If it is let to "run to weeds" for a few years, it will renew itself because while cultivated crops may not be able to make a go of it on poor soil, this doesn't apply to tough plants like pigweed, spurge, tumbleweed, purslane and others that even grow on hardpan or among stones. Their roots get to work at once, and after they go to seed and die they are still on the job turning out carbon dioxide. Lichens and bacteria are also tremendously important in this work of soil renewal, and after a time a new supply of potash is dissolved out of the unkaolinized part of the feldspar grains.

The Work of Lichens

A striking effect of plant life in the desert frequently results when lichens grow on rocks containing iron and manganese. Lichens are tough plants, and when dry weather sets in they survive by practically closing up shop and taking things easy until better times. With the coming of rain they set to work with enthusiasm and dissolve out much iron and manganese as carbonates. These are deposited as oxides around the lichen colonies and eventually spread to neighboring rocks of all types which become coated with a glossy black lacquer called desert varnish.

Most folks would be surprised at the abundant organic material in the desert soil. Besides remains of dead plants,

there is much food-waste of the animal population. This material accumulates during the dry season, and by the time rain sets in it has been reduced to powder and blown about until well mixed with the top soil.

It is difficult to imagine the earth without the soil mantle that supports the multitude of plant species that cover it today. But for millions of years, long after life in the seas had evolved to extremely complex types, the highest plants were the marine algae. The land was a bleak waste of badlands where the only form of rock breakage was from volcanic action, the chemical weathering of sulphides by hot water, and mechanical forces: floods, the shifting of fault blocks and the pounding of the surf.

Toward the beginning of the Devonian period, possibly 300,000,000 years ago, certain simply constructed plants, small things as plain in outward appearance as an onion shoot and less than eight inches high, crept warily out of the sea and began their adventures at the high tide mark, as if they hardly dared lose sight of their ancestral home. These were the plants known as hornea and rhynia. They showed characteristics that proved their alliance with the marine algae, but they also had true wood fiber.

With the life and death of such simple plants, soil formation began and within a short time, as geologic time goes, earth began to put on her familiar green complexion, announcing that whenever you see this color in leaf or stem, Mother Nature and her staff are making soil.—END

Lower slope of granitic exposure in last stages of decomposition. Author places tip of pick in residual sand—remains of rock digested by plants.





TWO STAGE STOPS ON THE BUTTERFIELD

CARRIZO

AFTER THE long, hot, and hazardous pull over the barren sands and brush-clogged silt of Salton Sink, driver and passengers welcomed the sight of a rough mud-and-sod hut set in coarse green grass where sunlight glinted from the surface of running water.

Carrizo Creek stage station was 14 hours of weary sun-blistering toil from the rough hospitality of Fort Yuma. The men who rode the leather seats of Butterfield's Overland Mail, jaded and muscle-sore from two weeks of jolting over the new southern trail from St. Louis, felt a ray of hope as they entered the wide creek bed and saw the rocky slopes of the brown hills lean toward them. The deserts were behind, water and grass lay ahead.

Though the water which sprang from the sand was alkaline, it spread wide and gave life to clumps of carrizo grass and mesquite, both of which provided welcome horse fodder. As suddenly as it appeared, the water again sank into the sand a short distance below the crude station.

Here, as at scores of similar stations along the desert route, the horses were changed quickly and the stage moved upgrade to the west. It was only 18 miles to Vallecito via Palm Spring (Agua Caliente), but it was a hard sandy pull and the Concord coach, with its precious pouches of mail, must not be slowed.

Between 1858 and 1861 the overland mail made six stops a week at

Carrizo stage station. Before that the water-hole on the western edge of the Colorado desert had saved the lives of hundreds of gold-seekers headed for the placers of the Sierra Nevadas. Like Vallecito and Warner's, Carrizo was a historic stop on the old emigrant trail, but achieved its greatest fame as a station of Butterfield's short-lived exploit.

Don Pedro Fages, in 1772, was the first white man to pass through the mountains at this point. His diary records: "This location is so well provided with pasture and water, with a superabundance of fine maguey as well as of firewood, that it has the conditions required for establishing a presidio." This energetic and observing leader later became one of California's most notable Spanish governors.

General Stephen Watts Kearney, bearing orders to take possession of Upper California and create a civil government, led his weary dragoons this way in 1846. The 100-man Army of the West, guided by Kit Carson, camped a night at Carrizo. Col. Cooke and his Mormon Battalion followed two months later, and found welcome rest beside the shallow Carrizo stream.

Carrizo Creek stage station has long since melted into the sand. This site is in Imperial County on private property near the U.S. Navy Carrizo Impact Area. Its accessibility is determined by the owner, and at present a fence along the property boundary across the old Carrizo Creek stage road prohibits access. Ranch buildings are maintained near the old site.

VALLECITO

SIX SWEATING horses halted before the squat earthen building, and two men started to unfasten the harness as a single dust-covered passenger climbed stiff-legged from the Concord coach. The leather-faced driver socketed his whip, shifted a cud of tobacco, and growled at a man who was bringing up two teams of fresh horses from the corral.

"Oughta make it in 23 days this trip. Dragoon's patched up again and the river ferry's workin'. Chief says we gotta keep 'em rollin' an' I'll catch it if we don't hit Warner's by sundown. Shake a leg, Jim!"

The man on the ground hardly looked up as he moved the fresh horses into place, but his voice was surly. "It ain't been said that Jim Lassator's Vallecito station ever slowed a Butterfield crate. An' we got our troubles too. Young bride from San Diego died here last night an' we had a buryin' this mornin'. I ain't got Apache troubles but the grazin's gettin' mighty lean." He snapped the last buckle, stepped back and waved to the driver. "We got Box Canyon opened up for ya . . . good rollin' to ya, Zack," he shouted.

The coach door slammed on the listless figure of the passenger as he dropped into his hard seat, Zack cracked his whip, and the slap, creak, and swish of the Overland Mail stage was soon swallowed in the desert silence.

Lassator returned to the shade of his ramada, noting that his helper was



Los Angeles County Museum diorama at left shows arrival of Butterfield stage at Vallecito. The coach is an exact replica of an Abbot and Downing Concord Coach. The shock-absorbing thoroughbrace of leather allowed the heavy body to rock; the force of inertia supplying the "boost" that relieved the team of strain from obstacles on the road. With six lines, brake and whip, a true reinsman knew how to get the most out of his loosely coupled teams.

BUTTERFIELD OVERLAND MAIL . . . By J. Wilson McKenney

watering the horses at the edge of the clear shallow stream a stone's throw to the south.

James Ruler Lassator could be proud of his part in pioneer United States transportation, for his Vallecito homestead had become an important unit in John Butterfield's 167-station system which stretched from St. Louis to San Francisco.

His isolated sod brick building was built in '51, and six years later Lassator helped James Birch with his San Antonio-to-San Diego "Jackass" Mail. And now, in the spring of 1859, Lassator longed for the sunny carefree days of Birch's experiment; Butterfield's night-and-day schedule was exciting, but it wore a man down.

A century has passed since the station-keeper pondered in the shade, but his Vallecito depot remains intact, thanks to a restoration project in the 1930s.

Carrizo Creek still flows fair water the year around, and there are good camping spots along the stream's banks. This is an ideal place to visit in late spring, but summers are warm.

Far from speed-bent motorists, Vallecito, now a county park, nestles in its peaceful and colorful little desert valley in the heart of the great Anza-Borrego country west of El Centro, California.—END

Photostatic copy of a page from the Texas Almanac of 1857, showing mileages between stations of James Birch's original mail contract line — later replaced by Butterfield's faster service. Note Vallecito, listed as "Lassator's."

148 pages from the TEXAS ALMANAC of 1857.

Itinerary of my own journey across the continent.

August 1.—From San Antonio to Castroville	25 miles.
2.—From Castroville to 9 miles east of Uvalde	46 "
3.—From camp to 11 miles west of Turkey creek	40 "
4.—From camp to near San Felipe creek	40 "
5.—From camp to 10 miles east of Fort Hudson	35 "
6.—From camp to 10 miles west of San Pedro	44 "
7.—From camp to 6 miles east of Live Oak creek	53 "
8.—From camp to 6 miles above Pecos spring	28 "
9.—From camp to Escondido creek, 8 miles east of the spring	44 "
10.—From camp to 10 miles west of	46 "
11.—From camp to Lympia creek	33 "
12.—From camp to Fort Davis	19 "
13.—From Fort Davis to 7 miles west of Deadman's Hole	42 "
14.—From camp to 8 miles west of Eagle Springs	51 "
15.—From camp to 10 miles south of Birchville	49 "
16.—From camp to Socorro	40 "
17.—From Socorro to Franklin, El Paso	17 "
18, 19, 20, 21.—In El Paso.	
22.—From El Paso to Fort Fillmore	44 "
23.—From Fort Fillmore to Picacho Village, 6 miles west of Mesilla	12 "
24.—From Picacho Village to 9 miles east of Cook's Spring	50 "
25.—From camp to mouth of Barro Mount canon, near Ojo de Ynez	55 "
26.—From camp to 9 miles east of River Saur	43 "
27.—From camp to 9 miles west of Dos Cabezas Spring	50 "
28.—From camp to ford of San Pedro river	40 "
29.—From camp to Mission San Xavier	58 "
30.—From Mission San Xavier to 30 miles west of Tucson	38 "
31.—From camp to 1-mile camp on Gila	40 "
Sept. 1.—From camp to Tisotal	69 "
2.—From Tisotal to second crossing of Gila	58 "
3.—From second crossing to Antelope Peak	52 "
4.—From Antelope Peak to Fort Yuma	40 "
5.—From Fort Yuma to Alamo Mucho	42 "
6.—From Alamo Mucho to Carrisa creek	53 "
7.—From Carrisa creek to Lassator's (Vallecito).	36 "
8.—From Lassator's to San Diego	49 "

The report of the superintendent 1,476 miles.
Making the trip personally from San Antonio to San Diego in thirty-eight days.
in 1857.



Sheepman Alfred Giraud of Bishop, California, has gathered what he believes is conclusive evidence that Alec Ramy's lost gold ledge exists.

Alec Ramy was not bitter. He had found—and then lost—a ledge of gold on a nightmarish prospecting trek into the Death Valley country. But, he escaped with his life. That was worth more than all the precious metal in the world! He told his story to a trusted friend, Alfred Giraud. Now—more than 50 years later—Giraud plans to search for the lost bonanza.

ALEC RAMY'S LOST BONANZA

By KEN WORTLEY
Map by Margo Gerke

"I HAVE A greater desire to find Ramy's mine than to exploit it," Alfred Giraud said. "It has been a fascinating challenge, and over the years I have been gathering my evidence. I'm ready now"

Alfred, an old sheepman who lives on his ranch near Bishop, California, pointed to a 200-gallon mobile water tank—water will have to be hauled nearly 40 miles for this lost mine search which centers in the Saline Valley, an arid 25-mile-long trough separated from Death Valley to the east by the Panamint Range.

The story begins over a century ago in the Maritime Alps of France where one of Alfred's countrymen, Alec Ramy, spent his boyhood herding sheep. When Ramy grew to manhood, he joined the French Foreign Legion and served on the Algerian frontier at Fort Sidi-bel-Abbes. Here he became tough and seasoned in the ways of the desert.

Immigrant

When Ramy's enlistment was over, he migrated to America, lured by the newly-discovered bonanzas of Nevada. The ex-Legionnaire found a life to his liking in booming Virginia City. Here was the kind of excitement his vivacious nature craved; but Ramy was ambitious, and he did not let pleasure interfere with work. He labored hard at mining, and soon became an expert. After a year in Nevada, he obtained a lease on an off-shoot of the Comstock Lode. Ramy took \$30,000 out of his mine in a few weeks.

Being a man of wealth was a new experience for Ramy. The money—plus his gregarious and good-natured personality—soon attracted a horde of friends and hangers-on. They went through the \$30,000 faster than it had taken Ramy to dig it out of the ground.

Ramy returned to the mines with a vengeance. By blundering luck he made another strike, and again amassed a small fortune. This time he was a bit more conservative with his money insofar as friends were concerned—he squandered most of it on himself. Tales were told of Ramy, how during many a night of hilarity he would dominate all entertainment at the saloons for hours on end, sing-

ing uproarious ballads he had learned as a Legionnaire.

The second stake went the way of the first, and unable to obtain another promising lease, Ramy worked as a day-wage miner. His restless spirit could not adapt to such routine life, and, like others before him who had tasted of fortunes taken from the earth, he turned prospector and headed into the vast unexplored desert.

After many winters of resolute but futile search for "the big one," Ramy succumbed to the lure of the arid lands and became a typical "desert rat." He roamed the Death Valley country for years. In the course of these wanderings he became acquainted with and well-liked by many of the Indians living in the region. Often he camped with them. His boisterous songs were welcome around the lonely campfires.

In the fall of 1904, while on an extended prospecting foray into the broken land around the southern tip of the Last Chance Range, Ramy made a dry camp. The country looked good, so he lingered longer than he normally would have. Short of water, he rationed it to his pack burros, and one night the thirsty animals broke their hobbles. When it was light enough to see, Ramy tracked the animals to the edge of vast forbidding Saline Valley. The burros were heading directly across the salt-encrusted flatlands to the base of the distant Inyo Mountains.

Heads for Water

Ramy knew he had little chance of overtaking the animals. He appraised his situation. His original plan had been to break camp that day and move on to a place several miles south along the foothills where water gathered in the sand tanks of a canyon wash. Bothered by inflammatory rheumatism in his feet, he reasoned that it would be wisest not to try to make it across Saline Valley, but to go to the tanks.

He filled two canteens with water from a supply reserved for the burros, and put a few provisions in a knapsack. The rest of the pack supplies had to be abandoned.

When Ramy arrived at the tanks late that afternoon, his feet were in

bad shape. He dug for water, but without luck. The tanks were dry, for no rain had fallen in the area for months.

The old Legionnaire knew full well that he faced a desperate situation. Every step now was torture, and to strike out across the glaring void of Saline Valley would have been suicide.

Another Chance

From the depths of his memory he recalled having seen a small amount of water seeping from beneath a large boulder in a wash to the south.

That same afternoon he continued his southward trek, stopping to rest only when it became too dark to proceed with safety. With the first pre-dawn haze, he staggered on. The country was exceptionally rough, and at one point he stumbled over a protruding quartz ledge. Years of prospecting immediately told him that this formation was of potential significance. He quickly examined the ledge. It contained particles of gold plainly visible to the naked eye. It was a bonanza!

But, were the gods mocking him? His need was for water—not gold. Stopping only long enough to break off a few samples of the ore, he hurried on as fast as his wounded feet would carry him.

Ramy did not remember what happened next. Soon after the merciless sun sank behind the Inyo Mountains to the west, a small band of Death Valley Indians camped near the edge of the Saline Valley heard a strange sound. At first they were frightened, believing that it was the voice of an evil spirit come to haunt them.

The voice grew louder and then began to fade. Evidently the spirit was moving away, and for this the Indians were thankful. Two young bucks, Grapevine Duck and Caldmore Jack, were more curious than frightened. The sound they heard had a familiar ring. They recognized the voice of Alec Ramy who often had sung at their winter camp near the great bend of the Amargosa.

Rescued

Grapevine Duck and Caldmore Jack ran to investigate. They found the deranged Ramy wandering about, bellying his favorite ballad of the French Foreign Legion.

The next thing Ramy remembered clearly was lying on cool sand while an Indian girl applied wet bandages to his burning feet. The old prospector stayed with the tribesmen for nine days, and when his feet were sufficiently healed, he struck out across the Saline Valley toward the distant Inyo

Mountains in an attempt to recover his pack animals.

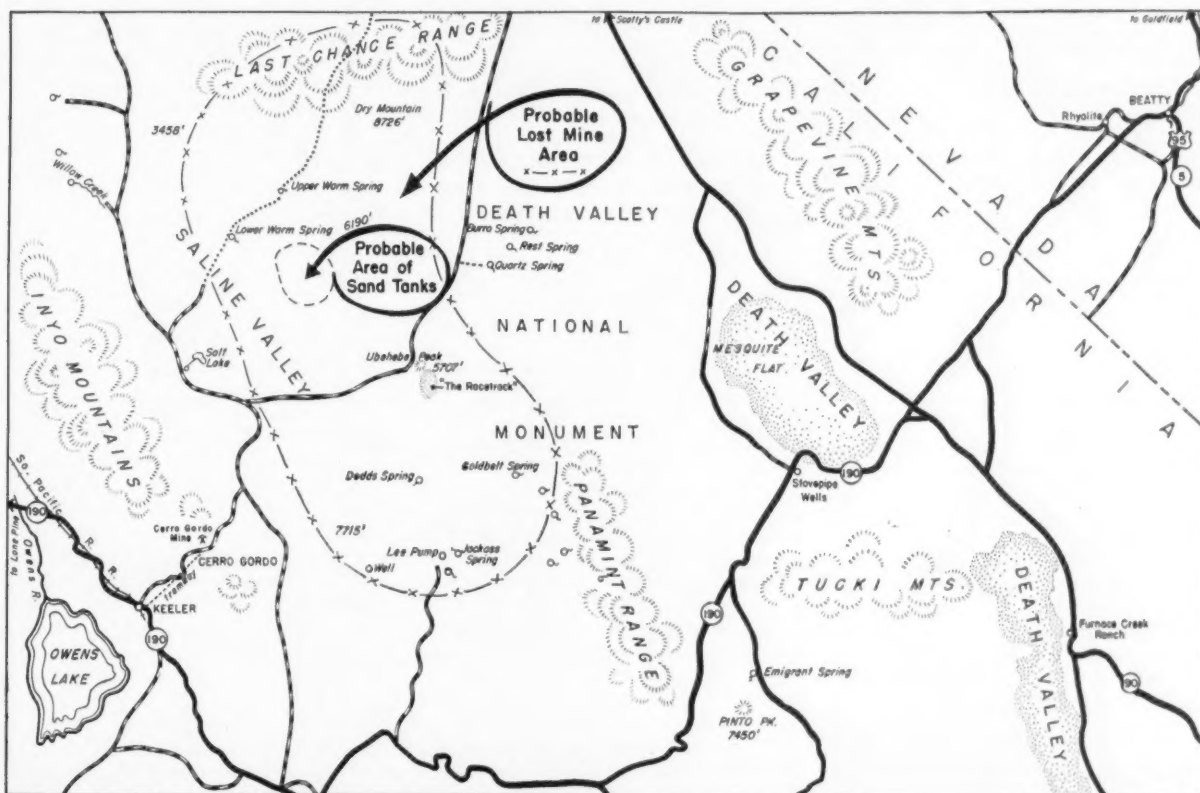
The long walk across the alkali plain again proved near-fatal for Ramy. Alfred Giraud, then a young man charged with the task of herding a flock of sheep in the mountains, found the prospector and brought him into his camp.

Low Esteem

"In those days," Alfred told me, "sheepmen did not hold prospectors in much esteem. These desert characters were almost always broke, usually dirty and ragged, and full of wild tales about gold. Of course sheepherders often were dirty and ragged, too, but we always had plenty to eat, a good bed to sleep on, and a fair wage waiting when our work was done."

Even after his countryman showed him the rich gold samples from the quartz ledge, Giraud was not interested in retracing Ramy's wandering steps back to the strike. "Gold from the mint meant more to me than a few specks of yellow in a rock."

Besides, there were many other things to talk about: the joy of drinking water; warm food; home. The young shepherd and the elderly prospector became fast friends. A few years later they again met in Owens Valley, and the bonds of friendship grew stronger. Just before he



died, Ramy gave Giraud a piece of rock taken from the quartz outcrop. He also tried to fill in as many blank spaces in his story of discovery as possible.

Time passed. Fifty years later, after Giraud had become a successful sheep rancher, he became interested in mining. Only then did he realize the value of the piece of ore Ramy had given him. He dug it out of his musty belongings and had it assayed. The sample was almost half gold—one of the richest pieces of ore ever discovered in Inyo County!

Search for Clues

Wherever Giraud went in the Inyo country he tried to find additional clues to Ramy's treasure. In the little town of Isabella, in neighboring Kern County, he ran across an old Chilean named Crisante Santavinas who had known Ramy. Santavinas was familiar with Ramy's discovery—he too had a piece of the ore. There was no doubt about it—the sample came from the same ledge.

Santavinas told his story: after Ramy's death, the Chilean spent several weeks attempting to locate the strike from which the specimen had been broken. He was not successful, but did find placer gold in what he believed to be the immediate vicinity of the ledge.

The placer gold was rough in character, indicating that it had originated close-by. He also found particles of quartz identical to the sample given him by Ramy. Santavinas said he had been telling of finding rich placer gold in the vicinity of the Ubehebe Peak for years, but that no one seemed to believe him. He was convinced that if he were not too old and crippled, he could find Ramy's gold.

Questions Indians

Encouraged by Santavinas' firm conviction that the mine existed, Giraud made a trip into Death Valley. He questioned every Indian he met. Had they known of a prospector named Ramy? Were they in that party that rescued the old Legionnaire?

At the old Indian Ranch in Death Valley he made an almost miraculous discovery. An old woman there not only remembered Ramy, she was the one who had cut the shoes from the old prospector's feet, and had taken care of him during his nine-day stay at the camp near Saline Valley. Her name was Stina Duck, wife of Grapevine Duck.

Elated at the success of his search for information, Giraud returned to his Bishop ranch and began making plans for a systematic search for Ramy's lost bonanza. He is certain this is one Death Valley lost mine that is not a myth.—END

OLD SHULTZ' GOLD MINE

While passing through Quartzsite, the author recalls the story of how an unlucky prospector became a happy mine owner

By CLARE BOWMAN

ON A RECENT trip through the Southwest, I found myself looking eagerly forward to seeing Quartzsite, Arizona, all because of a story an old desert rat had told me years before.

"Yep," the old man had mourned, "Quartzsite was a big town in them days. Now, man, woman and dog, they ain't 50 folks there. Old Shultz is probably living there yet, if he ain't dead. He was an old stiff. Be over 90 now."

The storyteller seemed to be looking far into the past as he gently twisted his Airedale's pointed ears with gnarled fingers. "In the early days when they first started mining around Quartzsite, fellas used to take a shovel, a pan and a piece of canvas and go out after gold. They'd spread out the canvas and then, holding the pan up like this" — he demonstrated with an imaginary gold pan — "they'd shake out the gravel. Then, they'd pick up the nuggets that was big enough to see easy. Gold was selling for \$18 an ounce then, and a fella'd get about \$10 worth 'fore he called it a day."

I envisioned the nuggets, like golden wads of chewed gum, scattered throughout the gravel on the canvas.

"But, after the biggest nuggets was gone, folks started dry washing," the old man went on. "There wasn't much bigger'n a pinhead when Shultz got there. He come out from Germany when he was a young fella. He was a chemist and tied in with some friends in New York for awhile, but he never did like New York, and headed west."

The old storyteller drew a long breath and sat in abstracted silence, and the Airedale, released from the caressing fingers, moved to the shade of a bush and settled down for a nap. "Shultz, he dug here and he dug there but never had no luck. He got so low he didn't even have enough for beans and, I guess, there were plenty times he was hungry."

"Gus Peterson and Bill Freeman had a claim near there. They took

some gold off of it, but it petered out. Then they started to sink another hole. They went down about five feet but they never hit nothing so they give it up. Well, one day Gus and Bill come out of a saloon — there were 14 saloons there in them days — and they see old Shultz standing on the boardwalk, looking down and out. They give him some money for grub and they figgered as how they'd have some fun with him and they said why didn't he go work that old hole they'd started.

"Shultz went up there and started digging right off. Folks thought it was a big joke. They figgered he'd become kind of loony from having so much tough luck, and they were all laughing up their sleeves at the crazy old coot.

"Well sir, Shultz went down 18 feet and he hit it. It was sure pretty, just like a speckled hen — gold specks all through that quartz."

I felt a tingle of excitement and exclaimed with delight, but the old man ignored me, intent on his story. "A couple of fellas from Los Angeles heard about Shultz' strike, and they came out to see it.

"Want to sell?" one of them asks.

"Might," Shultz answers.

"How much you want?"

"Hold on there," Shultz says. "You can see down there as far as I can. What's it worth to you?"

"I'll give you \$20,000."

"Is that cash money?"

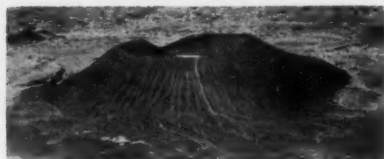
"Yep. Cash!"

"Mister," Shultz says, "you just bought yourself a mine."

I thought that was the end of the story, but the old man went on. "Shultz played it foxy with that \$20,000. He took off for Phoenix and put the money in government bonds. When he came back, he had beans — and a ham bone, too."

Quartzsite, today, may not be the bustling town the old man knew, but neither has it become the ghost town he feared. And, with the lifeline of U.S. Highway 60-70 passing through it, there is little danger that it will be.—END

Reader Response



Amboy Crater. It "erupted" for the Chicago sightseers.

The Bagdad Eruption . . .

Desert:

Many years ago, when the West was young and the railroads accepted low fares from sightseers anxious to visit California, excursion trains were popular. These trains made the Chicago to California run in four days. The guides assigned to them were kept busy pointing out interesting sights along the way.

One landmark never overlooked was the black crater of the extinct Amboy Crater between Amboy and Bagdad, California, in the heart of the Mojave Desert.

At this time, the Santa Fe regularly hauled water into Bagdad for the few residents there and the locomotives. The tank car crew had a long wait every day, and time hung heavy on their hands. One day they decided to create their own excitement.

For the next week they spent these spare hours gathering dry brush—all they could find—and dragging it to the old crater.

Then they waited for the special train from the East with all the wide-eyed newcomers. When they heard it rumbling down the track, they set fire to the huge bowl of brush. Flames and smoke billowed out of the volcano. It looked for all the world like the real thing!

There was much excitement among the passengers from Chicago. The telegraph wires were jammed with urgent messages to Los Angeles about the eruption. From there the news filtered out to the world. Newspapers put out extras. A special observation train was rushed to Bagdad.

The tank car crew had had its fun. I smile myself every time I see a picture of an extinct volcano, knowing that at one time such a crater provided excitement for five bored young men, one of whom was my husband.

CAROLYN SUGARS
Whittier, Calif.

The Plight of Beasts . . .

Desert:

While traveling through the Papago Indian Reservation in southern Arizona I saw two burros tied together with a heavy rope. The poor animals were alongside the road far from water.

I recalled what author Edmund C. Jaeger had to say (*Desert*, Feb. '59) about the sad treatment some of these animals receive. Isn't there any hope for relieving these tortured creatures of their miserable plight? There seems to be nothing man will not stoop to do in order to satisfy his cruel nature.

BEN MUDGE
Quartzsite, Arizona

The Wrong Road Crew . . .

Desert:

"Discovering Fable Valley" in the March *Desert* stated that the "Forest Service cut a primitive four-wheel-drive road into the area."

This statement is erroneous. The lands in this area are administered by the Bureau of Land Management with a District Office in Monticello. This road was built in connection with range rehabilitation work on the Dark Canyon Plateau and Fable Valley. The road was begun in the summer of 1957 and completed in the fall of 1958 by our own improvement crews. This entire area was opened up by the joint effort of the Bureau of Land Management and the S&S Cattle Co. The S&S Cattle Co. is permitted to run cattle in this area, and contributed a considerable amount of money to the government to help in this rehabilitation work.

Perhaps you people are aware that this Bureau is also charged with the protection of artifacts and ruins found on the Public Lands. The Antiquities Act of 1916 provides for the protection and guardianship of these archeological treasures.

Because of vandalism to these many ruins in San Juan County, we have hesitated to publicize our efforts in this area as far as access is concerned.

KEITH E. NORRIS
District Manager
Bureau of Land Management
Monticello, Utah

(Keith Norris: We are just as concerned as you are regarding vandalism to ruins found in the remote backcountry. But, our job is publicity — and we take the positive stand that man, despite his record, can and must be trusted. In Nell Murbarger's "Fable Valley" story you will note references to the anti-vandalism laws, and the plea that visitors look—but not touch. The alternative to this policy—the complete silence on the wonders of the outdoors—would be, I'm sure you will agree, quite untenable.—Ed.)

On Art, Cooking and Norton . . .

Desert:

Our January issue was a bit late reaching us South of the Border via New Hampshire. Never the less the wait was well rewarded by Marjorie Reed's back cover painting.

When you run out of desert painters, may I suggest a few on the coast who frequent the desert from time to time: Howard Little, Stella Stremski, Amy Brown O'Toole, J. Roland McNary, Alfred Mitchell and Chester Berg.

The Desert Kitchen Section sounds like good workable reading to those of us who camp with all types of equipment and all over the country. "Hints for Campers" would never go amiss. I would especially like to see stressed leaving one's camping spot clean. We could take from one of Dr. Jaeger's articles the motto, "Leave nothing but your footprints."

Also, when are you going to do an article on "our Map Maker," Norton Allen? We think he's a pretty nice guy. We're expecting him back from Guadalajara any day to spend a little more time with us.

VIOLET A. SWENOR
El Rancho de Los Dos
Tecpac, Mexico

(Western Writer Nell Murbarger has a standing assignment to do a feature story on Norton Allen. See Publisher's Notes for more on Norton.—Ed.)



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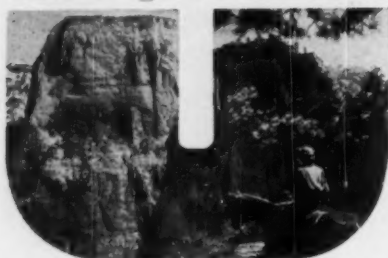
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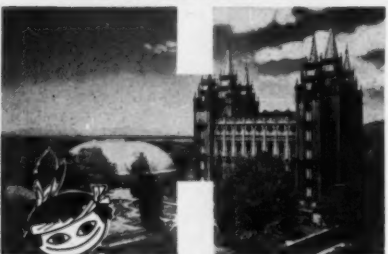
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SOUTHWEST NEWS BRIEFS

State Buys Joshua Land . . .

Lancaster, Calif. — Los Angeles County sold 40.4 acres of desert land in the Saddleback Butte area to the State for the proposed Joshua Trees State Park project. The land will be used to round out the State's holdings in the area.

Navajos Cheer Jazz . . .

Window Rock, Ariz.—Pianist Erroll Garner and his troop gave the first jazz concert ever presented on the Navajo Reservation—and the 1000 tribesmen who attended loved it. Both young and old greeted each selection with whoops, yells and foot-stomping. A tribal representative said the Indians attending came from all sections of the vast reservation.

Solar House Buyer Sues . . .

Phoenix—James A. Decker charged in a suit filed in Mariposa County Superior Court that the \$49,500 experimental house he purchased from the Association for Applied Solar Energy won't heat up. Decker is seeking to recover the \$24,800 already paid for the house, the *Phoenix Gazette* reported. The AASE was forced to dispose of the house last year when it was discovered that its operation was in violation of county zoning regulations. Decker said the intricate mechanism which operates the sun louvers was minus a motor.

Bicycles Replacing Burros . . .

Mexico City — There's a bicycle boom South of the Border, and the burro is being replaced as the peon's favorite means of transportation. Better highways, improved incomes and installment purchase plans have contributed to the bike boom. Prior to the government's 1953 tax exemption lure to domestic manufacturers, all of Mexico's bicycles were imported. Today there are many Mexican factories turning out bikes by the thousands.

Zion Improvement Slated . . .

Kanab, Utah—More than \$800,000 will be spent to improve roads and facilities at Zion National Park in the coming months. Major expenditures include \$300,000 to reconstruct Route 1 to the Oak Creek Headquarters, and \$500,000 for utilities and a visitor center for the Oak Creek Headquarters area.

Land Swindlers at Work . . .

Phoenix—Arizona supervisor of the U.S. Bureau of Land Management warned land-hungry visitors to steer clear of the latest real estate swindle scheme. E. I. Rowland said complaints are coming into the BLM office in Phoenix from people who have paid handsome fees for unpatented mining claims on a land locator's representation that the land can be used for a week end cabin or home site. Rowland reminded the public that it is illegal to stake or hold a mining claim for purposes other than mining.

Volunteers to Improve Pass . . .

Yucca Valley, Calif. — Manpower and heavy equipment were pledged by residents of the Pioneer Pass region (*Desert*, Sept. '58) to improve that route connecting Yucca Valley on the Mojave Desert to the Big Bear Mountain resort area. Money was raised locally for the purchase of culverts for road drainage, and fuel oil for the heavy equipment.

Park for Glen Canyon . . .

Page, Ariz.—National Park Service officials plan to spend \$3,500,000 on roads and trails and \$3,000,000 for buildings and utilities for recreational facilities at the Glen Canyon Reservoir—but the work is not scheduled to start for 10 years. Glen Canyon Dam, now under construction on the Colorado River, will form a reservoir extending nearly 200 miles north from the damsite at Page.

Three Dams Proposed . . .

Phoenix — A Chicago engineering firm has completed studies for the Arizona Power Authority that indicate three proposed dams on the Colorado River are "technically and economically feasible." The APA will seek Federal Power Commission authority this summer to begin construction of the first two of these dams—Bridge Canyon Dam northwest of Peach Springs (1963 completion date goal) and Prospect Canyon Dam northeast of Peach Springs. The third dam would be built in Marble Canyon near the northeast corner of Grand Canyon National Park. The three dams would have an electrical output of 1,147,000 kilowatts—about equal to Hoover Dam's capacity.

Visitor Center Contract . . .

Death Valley, Calif.—The National Park Service awarded a \$441,800 contract to an Oildale, Calif., contractor for construction of the visitor center in Death Valley National Monument. The contract calls for erection of two buildings connected by a paved patio. One building will consist of a museum, lobby and lecture hall; the other will contain administrative offices and shops. Portions of the patio will contain outdoor exhibits. The museum portion of the visitor center will be devoted to the history, natural history, geology and archeology of Death Valley.

Narrow Gauge RR Doomed . . .

Keeler, Calif. — Southern Pacific Railroad is seeking Interstate Commerce Commission permission to discontinue its narrow gauge Keeler Branch railroad in Owens Valley — the last narrow gauge common carrier west of the Rockies. The 70.4-mile freight line from Keeler to Laws is known as the "Slim Princess." Passenger service was discontinued on the line in 1932, and total traffic—mostly minerals—averages only three standard boxcar loads per operating day. The S.P. proposes to substitute truck service for the rail line. The Inyo County Board of Supervisors opposes the proposed abandonment.

School Contract Awarded . . .

Leupp, Ariz.—Awarding of a \$3,-175,000 contract for construction of new boarding school facilities for more than 600 additional Indian children in the elementary grades at Leupp on the Navajo Reservation was announced by the Department of Interior.

Top Funds for Dinosaur . . .

Vernal, Utah — Dinosaur National Monument has received more funds during the first three years of the National Park Service's Mission 66 project than any other national park or monument. The expenditures at Dinosaur totaled \$1,581,700 — about half of it for roads and trails and the other half for buildings and utilities. More money is earmarked for the development of minor roads and trails, and for the creation of fossil displays.

Resort Told to Provide Water . . .

Salton Sea, Calif.—The State Board of Health has ordered the Salton Sea Beach Estate developers to install a two-pipe water system. Deadline for submitting adequate plans for the water system is June 2, the *Riverside Daily Enterprise* reported. The dual system is designed to replace 100-gallon tanks atop each of the resort's homes. This water is hauled in by truck. The dual pipe system consists of one pipe for fresh water and another for utility water.

New Arizona City . . .

Glendale, Ariz. — The Arizona-Rochester Land and Development Company has proposed creation of a new and completely "scientifically designed" city in northwestern Mariposa County, 23 miles northwest of Glendale. The new city is to be named "Churchill," and 16,000 acres have been set aside for its development. It adjoins a 3400-acre tract purchased two years ago by the Sperry-Rand Corporation, and 900 acres now under option by Airesearch Corp.

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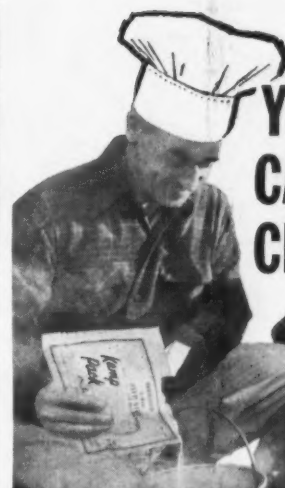
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PALM DESERT

CALIFORNIA

OFF-RESERVATION HEALTH AID CUT BY GOVERNMENT

Phoenix — Public Health Service officials in Arizona announced a cut-back in medical services for off-reservation Indians that amounts to a bar against treating Indians who moved from their reservations more than two years ago, the *Phoenix Gazette* reported. Dr. William S. Baum, chief of the Public Health Service in Phoenix, said the cut-back was occasioned by a greater acceptance of white men's medicine among Indians which has entirely utilized the present PHS resources. In 1955, he pointed out, the PHS treated 7600 patients — 1958's total was 10,700.

Dr. Baum said the Public Health Service regards the reservation Indi-

an's needs as its first duty. Next priority goes to relocated and vocational training Indians, those living off the reservation less than two years, seasonally employed transients from reservations, and emergency cases, in that order.

The men's wing of the tuberculosis sanitarium in Phoenix will be converted into an enlarged hospital for medical and pediatric patients presently cared for at the hospital on the Indian School campus. The conversion is the first step in a plan to establish a medical and surgical center in Phoenix.

Many Indians were critical of the service being rendered by the government since PHS took over from the Bureau of Indian Affairs in 1955.

Hard Rock Shorty of Death Valley



It was in the spring of the year and Hard Rock Shorty was sitting on the porch of the Inferno store, picking dust out of the cracks in the pine boards on the floor. A dude from Bakersfield walked out the door with a bottle of lemon squash in his hand. He stood at the top of the steps and gazed into the desert distance.

"Even in the springtime this country doesn't grow a darn thing, unless you call that creosote bush a plant," he said.

Hard Rock squinted at the stranger a moment, then drawled: "Get some rain here and things grow."

"But when does it ever rain?" asked the newcomer, "and what can you grow?"

Shorty scratched the stubble of his beard, then opened up, "Mister, once — back in '23 I believe—we had lots o' winter rain, maybe three, four inches, then we had a nice April storm that brought another coupla inches. Just plain soggy 'round here.

"With all that moisture 'n th' warm weather movin' in, I figgerd to try some farmin'. Didn't want to do too much, but I've always hankered for home-grown watermillions.

"Well, Eight Ball Crick was

runnin' a good trickle clear up to May—unheard of, but challengin'. I picks up a package of watermillion seeds 'n plants 'em in the sand 'longside the crick.

"With the warm weather—up in the 90s that time o' year—'n water all around, th' seeds sprouted in two days.

"Two more days 'n the vines put out flowers, an', dawgone if they wasn't a bunch o' nubbin watermillions, size o' yer thumb-nail, on th' ends of 'em vines th' next day."

Hard Rock Shorty scratched the itchy part of the back of his head, and filtered another match through the Edgeworth in his pipe. "Well, mister, you asked if anythin' ever grewed in this country. Shoulda seen them watermillions! Ten days after I planted 'em seeds, th' vines had melons big as corsets. The desert sun 'n all that moisture in th' ground made an amazin' influence.

"Only trouble," said Hard Rock, "wuz that I never could catch up with them 'millions. Th' vines wuz growin' so fast they drug the 'millions all over th' sand, wore out the rinds, and every time I'd bend over to cut a plug, I'd miss my target by a foot or so."

THE *Desert* MAGAZINE CLOSE-UPS

Clare Bowman of Palo Alto, California, heard the story of Shultz ("Old Shultz Gold Mine") from a veteran prospector who was camped at Pinyon Flats on the Palms-to-Pines Highway in Southern California.

"The frugality of his equipment amazed me. He was a chunky man, clear-eyed and with only the stubble of a beard, and he was hungry for someone to talk to. My husband and I were good listeners," she writes.

"I can still feel the warmth of the sun on my head and shoulders as the three of us sat on a picnic table in the campground. Something glittery caught my eye and I got down to pick it up.

"What you got there?" the old man asked.

"Only a pebble," I answered. "I was hoping it was a gold nugget."

"That puts me in mind of old Shultz out in Quartzsite," our new friend said—and off he was on his story."

Steve Lowell ("Smokey Bear's Early Days") has been a wire service newsman in Albuquerque since the end of World War II. He came to know and love the Southwest while stationed in Phoenix as a flying instructor during the war. The Lowells have two adopted boys "who also like the sunny almost-year-long outdoor playtime of the Southwest."

"First Lady of Santa Clara" was written by Mary Branham of Santa Fe, who has authored "both fact and fiction on Southwestern subjects—including the script for the recently released New Mexico State Tourist Bureau movie, 'Land of Enchantment.'" Also, she is author of *Good Morning American Ladies*, a book on European travel.

* * *

Susan Wilshire Jordan (now a widow), author of "Memories of Broad Horizons," lives in Los Angeles on a hillside covered with succulents, which she finds a rewarding hobby.

Because of their love of the desert, Colonel Jordan (after his retirement in 1922) and Mrs. Jordan moved to the Oregon desert in Hermiston where, for 17 years, they watched 700 acres of barren wasteland grow into a productive farm, green with alfalfa and tinkling with cowbells.

* * *

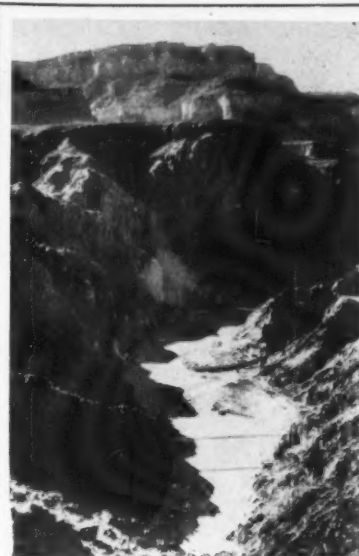
Charles Kelly, for many years *Desert Magazine's* major contributor of feature articles with Utah settings, recently retired as superintendent of Capitol Reef National Monument, the Utah State Historical Society reported. Kelly plans to continue his study of prehistoric rock writings. He and Mrs. Kelly reside at 124 "S" Street, Salt Lake City.

* * *

After serving with the Marines in World War I, Kenneth Wortley took up a homestead in the Indian Wells Valley of California's Mojave Desert—an area close to the setting of his lost mine story in this month's *Desert*: "Alec Ramy's Lost Bonanza."

He knew and prospected with many of the oldtimers. He was at Randsburg when

Hamp Williams discovered the Kelley Silver Mine, and at Mojave when Bruce Minard found the Golden Queen.



Wilton Hoy Photo

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JUNE	4,	5,	6;	12,	13;
	18,	19,	20;	26,	27.

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2-day fare, \$60. Deposit, \$15
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You may drive your car to HITE; You may fly your private plane; You may share on charter plane; You may travel ALL overland. Fares are very reasonable.

As of 25 March, 55% of our guests will fly to rendezvous at HITE.

Identify the camera location of above photo and receive \$5 credit.

For the person who becomes our 1000th boating guest, the full fare will be refunded at landing.

Write for information on our 1025 mile Arctic River Expedition of July and August, 1959, on the Magnificent Mackenzie in Canada, where we first boated in 1954.

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WESTERN RIVER TOURS
Richfield, Utah

Correspondents: please allow up to two weeks delay in mail, wire or phone contact during April—and up to one week delay during May & June, because operators will be on the river guiding boat trips.

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Gallup, New Mexico . . .

The El Paso Natural Gas Company announced plans for the exploration of coal resources on 34,500 acres of Navajo Indian Reservation land in New Mexico. The project may lead to an expenditure of more than \$1,000,000 and employment of as many as 200 Indians. The land area involved lies immediately south of a 25,000-acre area which has been under a coal mining lease held by the Utah Construction Company since the fall of 1957.

Bingham, Utah . . .

Recently completed was the longest single-track mine tunnel in the nation—an 18,000-foot-long bore in the Utah Copper Division's (Kennecott) Bingham Mine. The tunnel, 18 feet wide and 24 feet high, cost \$11,000,000. It will provide rail access from the assembly yards at the mouth of Bingham Canyon to the floor of the giant Bingham Open Pit. The cost of removing ore and waste from the floor of the pit will be reduced when the new tunnel is placed in operation. The tunnel project was started in October, 1956.

Goldfield, Nevada . . .

Insurgent shareholders of the Goldfield Consolidated Mines Company announced plans to wage a proxy fight against the present management. The group charged that the company bosses are not aggressive enough, and are missing opportunities for "exploitation of various natural resources" and diversification.

Virgin, Utah . . .

Utah's first oil pool is back in production. Intermittently worked since 1907, the Virgin field in Washington County has yielded less than 200,000 barrels of oil down through the years. More than 100 shallow wells have been drilled in this ground—only half of them productive. While the latest operation at Virgin is small, it has revived interest in prospecting for petroleum in the southwestern part of the state, the *Salt Lake Tribune* reports.

Reno . . .

Shuichi Okada, Tokyo attorney representing the Port of Stockton in Japan, announced that interests in his country are studying a long range plan to buy Nevada iron ore at the rate of a million tons a year for the next five years. Okada's estimate would represent a 40 percent increase in the purchases made in Nevada by Japanese industry at present. Five Nevada counties (Churchill, Douglas, Humboldt, Nye and Pershing) send iron ore to Japan via the Port of Stockton in central California. In 1957 a total of 904,455 tons of Nevada ore was shipped on specially constructed Japanese vessels.

Washington, D. C. . . .

The Bureau of Mines has invited the nation's petroleum and chemical industries to express their interest in participating with the government in an underground nuclear explosive test in oil-shale formations. The test blast, expected to cost \$2,500,000, would be a part of the Plowshare Program for the peaceful uses of nuclear devices. Scientists are hopeful that such a blast would free much of the petroleum from the shale.

DESERT QUIZ ANSWERS

Questions are on page 6

1. Pueblo uprising.
2. Weathered-out ore.
3. Little San Bernardino.
4. Dick Wick Hall.
5. Elephant Butte Dam is on the Rio Grande in New Mexico.
6. Mountain man.
7. The giant sloth is extinct.
8. Cholla—because its spiny sections cling to clothing of those who brush against it.
9. Winslow and Flagstaff.
10. Earps.
11. Wildflower.
12. Warn adversaries.
13. Vermilion Sea.
14. Black color.
15. Copper pit.
16. Saguaro.
17. Historical inscriptions.
18. Salt.
19. 1847.
20. Bird.

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BOOKS of the SOUTHWEST

Books reviewed on this page are selected as being worthy of your consideration. They can be purchased by mail from Desert Magazine Book Shop, Palm Desert, California. Please add four percent sales tax on orders to be sent to California. Write for complete catalog of Southwestern books.

COURAGE AND FAITH AT HOLE-IN-THE-ROCK

In October, 1879, a wagon train of Mormon settlers left Paragonah, Utah, to establish a new settlement on the San Juan River at the present site of Bluff. They carried provisions for a six-weeks' trek across one of the most precipitous sectors of the great sandstone and slick-rock area in the Southwest.

It was nearly six months later that they reached their destination and the story of their achievement is one of the most heroic episodes in American history. This is the expedition known as the Hole-in-the-Rock.

Mormon archives contain a vast collection of notes and diaries, written by participants in the migration and by relatives and friends, but it has remained for David E. Miller of the history department at the University of Utah to bring together this miscellany of information, reconcile the discrepancies, and give continuity to the story. The author has devoted the hours outside of his classroom duties to the task for several years, and has done a masterful job of presenting this material in the book *Hole-in-the-Rock*, which is just off the press.

The book takes its title from the most difficult single experience on the trek — the taking of the wagons and livestock from the high cliffs of the plateau near Escalante down to the Colorado River through a precipitous cleft in the sidewall of the canyon—a place where weeks of chiseling hard rock without the aid of explosives was necessary.

There were many women and children in the party and they carried on through the hardships of the journey with no less courage than the men.

In the light of history, it was an ill-advised expedition — that is, it was over the worst possible route. It was a short-cut that had not been thoroughly explored in advance.

In addition to the story of the journey, the author has added many interesting sidelights in the footnotes and in an extensive appendix that includes pertinent material from diaries and other records. A complete roster of the personnel is given.

Published by University of Utah Press. Maps. Bibliography. Index and biographical notes. \$5.50.

NEW READERS' GUIDE TO THE CALIFORNIA DESERT

For the great fraternity of Americans who read books, and especially for those who find the California desert a subject for fascinating study, there has recently been published a descriptive bibliography that will long be recognized as the finest guidepost to desert literature ever compiled.

The book, *Desert Voices*, is the work of E. I. Edwards, a business consultant who for many years has dedicated much of his time to the search for books, magazines, papers and archives pertaining to every aspect of the California desert—its geography, history, lore, plant and wildlife, and its people.

All the well known names of past and present appear in this book — George Wharton James, J. Smeaton Chase, Mary Austin, Elliott Coues, Dix Van Dyke, William Lewis Manly, Dr. Edmund Jaeger—and many hundreds of writers whose works are not so well known. Many of the magazine articles which have appeared in *Desert* and *Westways* magazines and other periodicals also are credited to their authors.

This is no ordinary bibliography, for the author has given with each of the 1500 titles a brief synopsis of the content of the book or manuscript. Obviously such research as has gone into the preparation of this book is a labor of love, for bibliographies never become best sellers.

The foreword was written and the photographs reproduced in the volume taken by Harold O. Weight, former editorial associate on the staff of *Desert Magazine*. The author gives much credit to both Harold and Lucile Weight for the help they gave him in the preparation of the copy for this book, and also to Burr Belden of *San Bernardino Sun*.

E. I. Edwards is the author of four previous desert books: *The Valley Whose Name Is Death*, a bibliography of Death Valley literature published in 1940, *Desert Yarns* in 1949, *Desert Treasure* and *Into an Alkali Valley*.

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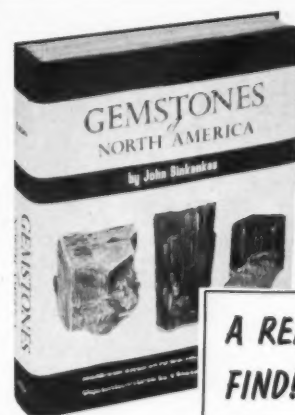
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Carnelian and Roses at Ash Hill

By HAROLD WEIGHT

Map by Margo Gerke

I STAND IN awe of people who write authoritative books about the Southwest after spending only a season or two here. Every time I begin to fancy that I "know" even some small corner of our desert, this fantastic land raps my knuckles with a new enigma or contradiction. It happened again during the great flowering season of 1958—on an expedition into the paint-pot chaos of volcanics that lie south and east of Ash Hill on the Mojave Desert of California.

Ash Hill itself is a black-topped gray-splotched bulk seven miles east

of Ludlow. It has been a landmark since early times on the desert. It certainly looks like a lava-coated pile of ash, and I had supposed that is where it received its name. But it has been declared by a place name authority that the hill commemorates a pioneer railroad surveyor, Ben Ash, who is said to have perished nearby.

Whatever the origin, the butte does have a name, and that is more than I have been able to discover for the bright wilderness of hills, ridges, canyons and washes which it dominates. We call it the Ash Hill badlands for, although it is eroded into volcanics

rather than sedimentaries, it was cut by violent storms in an arid land of sparse vegetation, and in other ways seems to fit accepted geological definitions. And where the washes shear through ash formations, typical badland topography has developed.

Promising Locale

The Ash Hill country is bounded on the north and partially on the east by Highway 66, on the south by a pipeline trail, and on the west by the Ludlow - Stedman road. These badlands can best be seen from Highway 66 near Klondike, by motorists traveling west. And from the first time we saw it from the highway, it looked to us as if it should produce good mineral specimens.

But appearances are no guarantee of contents so far as rocks are concerned, especially in this portion of the Mojave. Volcanic formations of widely separated ages are found along the great trough which contains Amboy and Pisgah craters and several lesser known cones. Much of the eruption—and the creation of those prominent black lava flows — took place only yesterday in geologic time, in the Quaternary. These "recent" rocks often prove disappointing to the amateur collectors.

But here and there are exposures of much more ancient Tertiary volcanic violence. In the rhyolites and andesites of these formations the rockhound often finds choice examples of Nature's gemstone production.

No Road In

When we tried to drive from Highway 66 to the reddish volcanics in the Ash Hill badlands, we could find no direct approach. In fact, the front presented to the highway was distinctly unfriendly even to four-wheel drive. On our first attempt, just to the east of Ash Hill, we soon were crawling and spinning in a soft soil bajada. Other sorties from likely points proved no more successful. It was evident

Buren Briggs, who accompanied author on one of his trips to the Ash Hill area, examines pieces of the chalcedony and chalcedony rose so abundant in this Mojave gem field.



Here's a field trip to the Ash Hill Badlands on the Mojave where author Harold Weight discovered gem rocks—and re-discovered the fact that the desert offers other treasures . . .

there would be a long hike from the closest penetration we could achieve.

In a final effort, we checked a stretch of weathered paving—9.2 miles east of Ludlow—that angles sharply southward from the highway toward the eastern tip of the badland hills. Where it cut 66, a white post had been planted in the road center to indicate abandonment.

The old road is difficult to get on. It leaves 66 where there is a long curve and no shoulder on either side. It is necessary, if coming from the east, to make a sharp U-turn across 66. This maneuver can be extremely dangerous in the high speed traffic on this highway, and great caution, both entering and leaving, is demanded.

Old Highway

Once safely on the old paving, it surprised us. Apparently a forgotten stretch of National Old Trails, which preceded U.S. 66, the road continued for almost two miles along the edge of the badlands we wanted to prospect. At 1.3 miles from the main highway, we turned on the faint trace of a mining road branching to the west. Our side-trail soon became deep ruts, and plunged into one of the big washes. Immediately, because of the softness of the wash bed, it became necessary to use four-wheel drive.

The washes here are more typical of the Colorado Desert than of the Mojave—open with flat gravel beds and firm enough so that we could follow them far back into the ridges.

Colorful Land

We spent the rest of the day exploring the badlands, eating lunch in the shade of a sheer dark-red wall at the foot of a dry waterfall. It was an exciting day. The Ash Hill country is a paint pot of colors which would not be suspected looking in from the highway—ash white topping brilliant orange, robin's egg splotched with orange-red, ochre, purple, rose, lavender, cream, brown, black. Most of the colors become intensified on hazy or semi-cloudy days and late in the day. As a friend said, on a later trip: "Goodness, the fires are hardly out here!"

As darkness forced us homeward

on that first trip, we still didn't know the full extent of the badlands as rock-collecting territory. We had found enormous quantities of silicates—but no high grade. We had found tons of chalcedony, but it was colorless or quartz. We had found agate, but most of it was coarse-grained or plain bands. The only prizes of the trip were some tiny but beautiful chalcedony roses—float, coming down one of the big washes from an unknown source.

But, with that much promise we felt that it was only a matter of more hunting before we would find something worthwhile. The second trip was a dud, but it ended with us being even more fascinated with the Ash Hill badlands. Then on the third trip, just at dusk and miles from the car, I found good carnelian float.

Success

At home I located on a topographic quad the area where I had found the carnelian. The next weekend—trip number four—despite a cold wind, dark skies and splatters of rain, we were in the field early. The carnelian location is within a mile of the old stretch of paving, so we parked the car in a flat area 0.6 miles from U.S. 66 and hiked across a broad wash to the hills which lay almost due west. This is a procedure I would recommend for those with standard transportation. The washes through which we worked out a roundabout route to the foot of the gem hills can become sand-traps without four-wheel drive.

When we reached the low fore-hills, less than half a mile from the car, we began to find clear chalcedony with colorful carnelian spots. In places on the slopes of the main hills the material became more abundant, and in larger pieces, with bands of carnelian or sard. But it was on the far side of the adjoining hill to the southwest that we hit the best field. Here little washes had cut through what appears to be discontinuous ledges, and large chunks were scattered down them. It was a sort of mixture of chalcedony and carnelian or sard in waves, thin streaks, convolutions and plumes. Although it was raining in earnest by then so that it was difficult to evaluate the material, it was obvious we had discovered much good grade cutting rock.

On later trips we found good material scattered on the slopes below, to the southwest, and smaller pieces

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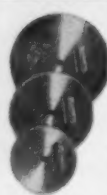
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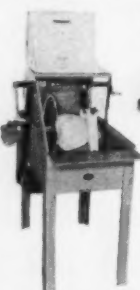
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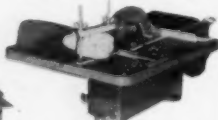
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between the little washes. The ledges from which this rock is weathering run north of west by south of east. Hiking along this trend for a considerable distance, I found a number of additional ledge exposures. I also found that it varied in character from plain chalcedony or agate through sard-carnelian to, in a few specimens, a colorful flower agate.

On other trips we tackled the problem of the little chalcedony roses we had discovered as float. Hiking for more than a mile up the big wash, we found them scattered throughout the country, mainly on the dissected terraces north of the wash. Some, fragile in appearance as delicate flowers, were in place not far south of Ash Hill. We could reach out and pick them from vertical seams in the wash wall where they were interlaced with thin veins of chalcedony. Once we entered the area from the pipe line road, on the south, and found quantities of colorless banded agate, chalcedony and roses of good grade. At present there is a great deal of all these rocks available on the surface. Later, it may be necessary to prospect and dig for good grade.

Becoming Familiar

During the two years we had made occasional trips into the Ash Hill badlands, it became one of our favorite desert retreats. And I felt that I knew the area pretty well. Geologically and geographically it was a wonderland—those beautiful washes, with their gentle gradient, ideal for hiking; fascinating juxtapositions of rock formations; spectacularly eroded and colored ashes, tuffs and volcanics.

Botanically, it wasn't worth much. Oh, there was creosote, galleta, burro-bush, bladder-pod and a little desert holly, with some smoke trees and cats-

claw in the wash. But, essentially it appeared a truly barren land, without the comparative lushness of more favored desert areas.

Certainly it could never know the beauty of abundant desert wildflowers to gentle its harshness. Hadn't I been there in the possible blooming months of two successive years? And hadn't it remained a naked wasteland, with scarcely a blossoming flower, and hardly a touch of green?

Rains, Wildflowers

Then — in the winter of 1957-58 — the rains came as if spaced by a master irrigationist. And alternating with them the unobscured sun flooded the desert earth with warmth. While the calendar still said winter, countless plants burst through the surface in the beginning of the greatest desert flowering that I remember. And "burst" is exactly the word. Some plants — notably the dune evening primrose—cracked the earth in radiating patterns and pushed it upward in their swift growth.

And that spring when we made our first trip into those barren badlands of the Ash Hill country, we discovered a different world. Everywhere we turned flowers glowed and nodded, softening the angular lines of the volcanic buttes and hills. Geraeas and rock daisies and — especially lovely against the black rocks—the lilac and carmine of the five-spot mallow.

Driving through the washes we found that blossoms had taken over. Raw natural roadways of rock and gravel were transformed into curving streams of flowers. In the places where shadows of rocks or canyon walls had held the moisture longer, there were wall-to-wall carpets of blue-purple phacelia, golden-yellow geraea, aperi-

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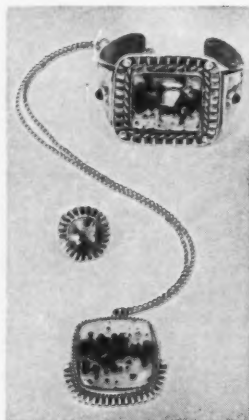
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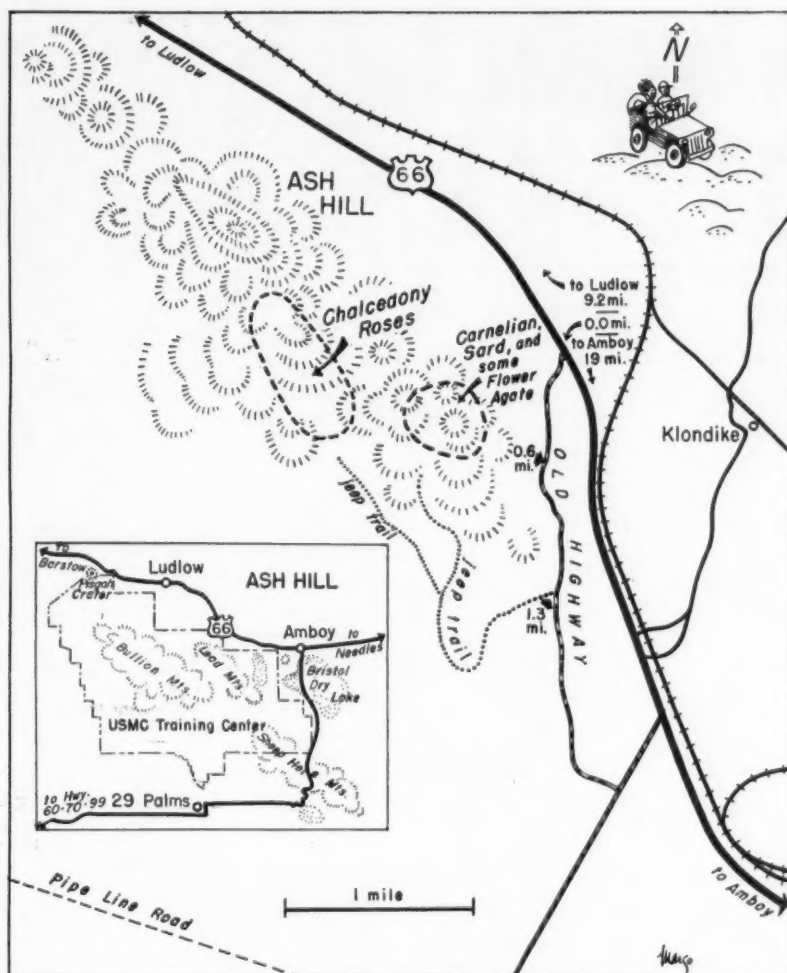
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We traced the tracks we had made the year before by the bands of richer growth where the wheels had tilled the surface, helping the rainfall collect and seep through to waiting generations of deep-buried seeds. The flowers were so abundant that no matter what care was taken we could not drive up the narrower washes without crushing plants and blossoms.

So we never reached the rock field that day. But, besides the enjoyment of that wonderful flower display, I learned again that anyone who formulates dogmatic generalizations about the desert—or any of its parts or any of its life—is likely to find himself confronted with irrefutable evidence of his folly.

Early this year we returned to the Ash Hill badlands. The rocks were still there, untouched since our last visit nearly a year before. And there were no fresh wheel tracks in the washes. In fact, there no longer were

traces of the old trails we had followed in the main washes, or the one we had made up the side wash. Summer storms had washed them away.

The flowers were gone, too, of course. In most cases, not even an indication remained. And while young green plants were showing, there were only a few where the year before there had been thousands. The natural roadways were open and barren. The badlands had been given back to roses of chalcodony and flowers of moss and agate.

When will they flower again? I would not even try to guess. It is apparent from such displays as that of last spring that year after year a portion—and the greater portion—of all the seeds that mature—is buried so deeply that only an unusual combination of moisture and warmth can bring germination.

Rainfall comes in cycles. One long-range record shows an 11 year cycle of maximum precipitation coinciding with high sunspot activity. There have been notable desert wildflower displays

in 1939, 1949 and 1958. But, 1952 also was an unusually good year.

More is needed than rainfall. There must be the proper amounts at the proper times, coupled with the right warmth at the right time. Who can say when such conditions again will occur?

But, until then I will be content with the more durable beauty of stone flowers and the flower-like gems that can be cut from the rocks of the Ash Hill badlands. For that country can never look sterile to me again. I know that even in that empty land the harsh washes and naked hillslopes are only a mask, and a protection to keep beauty safe until time and moisture and temperature bring it forth.

And in the meantime, when I expound about the desert, I will remember to keep my fingers crossed and sometimes say: All I know is that I do not know.—END

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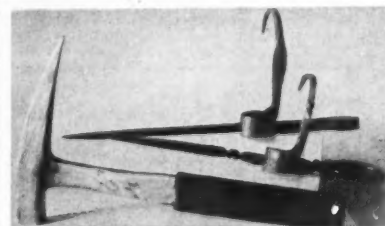
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REPORTS FROM THE FIELD

These notes are intended as suggestions for your collecting trips. Always make local inquiry before following trails into uninhabited areas. Mail your recent information on collecting areas (new fields, status changes, roads, etc.) that you want to share with other hobbyists, to "Field Reports," Desert Magazine, Palm Desert, California.

Dig for Howlite . . .

San Fernando, Calif. — Many tons of beautiful howlite have been taken from the dumps of the old mine in Tick Canyon, but much material remains. Joe Nichols, field trip chairman of the San Fernando Valley Mineral and Gem Society recommends that hobbyists take pick and shovel to this collecting area. Here are directions to Tick Canyon: drive north on U. S. Highway 6 to approximately three miles beyond the Solemint Junction. Turn right at the new plastics factory onto the Davenport Road, and follow this paved route over the hill about one mile to Tick Canyon and the old borax mine. Park on either side of the highway or drive the additional quarter-mile up the canyon. The water in the canyon is not fit for drinking, and firewood is scarce. The hills back of the old mine have yielded many fine moss, plume and banded agates and jaspers. Beautiful and very high grade bloodstone is found farther up the canyon back of the mine, Nichols said. Bloodstone is scarce in this area.

Garnet-Epidote Quality Poor . . .

Victorville, Calif.—Garnet and epidote from the Verde Antique-Sidewinder Hill collecting fields east of Victorville were found by a caravan of rockhounds from the Ontario, California, Bear Gulch Rock Club. Members report the material was of inferior quality. Green and yellow verde antique marble specimens were collected at the old quarries on the hillsides, but the more highly prized vivid lemon-colored marble was scarce.

Road to Cady "Excellent" . . .

Crucero, Calif.—Mrs. Robert L. Pitzer of Arcadia, Calif., writes that the road to the Cady Mountains in the heart of the Mojave Desert is in excellent condition: "We went by jeep, but four-wheel-drive was not necessary for conventional cars and even large travel trailers were parked in many of the more remote canyons. The main route north to Crucero recently was graded. The side canyon routes were rough, but well used. North of Crucero there is heavy sand, and though some cars got through, we could see where they had trouble."

Rare Borate Crystal . . .

Boron, Calif.—Members of the Pomona Valley Mineral Club and the Arrowhead Mineralogical Society recently staged a successful field trip to the rich Boron area. An inderite crystal proved to be the most highly prized specimen collected that week end. Inderite is a rare colorless to gray magnesium borate mineral, and Boron is the only place on earth where inderite has been found in its crystal form. It has a glassy appearance and very pronounced cleavage. Also uncovered were lesserite crystals, and ulexite, colemanite and realgar specimens. Gem clubs may secure permission to collect minerals in the Pacific Coast Borax Company's huge dump adjacent to the Boron Open Pit Mine by writing to Chief Chemist Vince Morgan, c/o the company.

Fossils In Highway Cut . . .

Topeka, Kansas — Local rockhounds are discovering that the highway excavations immediately east of the Calhoun Bluff area are productive fossil collecting areas. Well preserved marine fossils, as well as coal forest fossils, were collected here. Some of the tiny mollusks found on the coal plants are replacements in marcasite, and while they are quite beautiful, they are extremely delicate, the hobbyists reported.

100 Pound Geode . . .

Topok, Calif. — Long Beach hobbyists spent a week end on the desert in the Topok area where, they report, excellent agate and geodes were collected. One club member found a 100 pound geode.

Three Utah Gem Fields . . .

Here are directions to three Utah collecting fields as reported by Will T. Scott of La Mesa, California: Field No. 1: Immediately after leaving the south gate of Cedar Breaks National Monument, begin looking on the west side of the road. Agate, some of it clear with red and black moss patterns, was found along the road for a distance of three miles. Scott does not know how far to the west the field extends. Field No. 2: Take the paved road from Panguitch to Panguitch Lake. The pavement ends just north of the lake, and about half a mile beyond there is a good forest camp with water and sanitary facilities. Directly across the dirt road south of camp, Scott reports excellent agate and jasper locales. The jasper is of red, green and yellow flower design. The field was not prospected to any great degree, but Scott said he found good rock over a wide area. Field No. 3: Leave Jericho, Utah, and head west. Keep right at fork about one mile west of town, a good bladed road which leads to Simpson Spring and Goshute Mountain. About 10 miles from Jericho road climbs to a low pass. There are rock outcrops on both sides of the road—agate and jasper. Best deposits are found on right. This material is in huge veins outcropping on top and sides of the hills. The jasper is excellent. Agate is not as plentiful. Scott says there is a thousand tons of cutting material exposed on the surface. It appeared that the area had been filed on, but Scott saw no evidence of assessment work.

Enough Agate for All . . .

St. Johns, Ariz.—William Garrett of Kanab, Utah, reports there is enough agate in the St. Johns vicinity to satisfy all rockhounds. Here are the directions sent by Garrett to the most promising locale: travel north on Highway 666 about five miles from St. Johns. Both sides of the highway in this vicinity are productive. Garrett found moss, iris, banded, amber, black and some blue to clear specimens. The hills in this area are grassy, and the best place to hunt for minerals is where the hills show weathering. Remember to shut all gates behind you.

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AMATEUR GEM CUTTER

By Dr. H. C. DAKE, Editor of The Mineralogist

No Synthetic Opal

Precious fire opal stands as the last of the gems that cannot be produced in the laboratory even in passable imitation or duplication. Many workers have tried for centuries, but opal defies all of man's efforts.

Ruby, sapphire, emerald and many others have long since fallen to the laboratory worker. Diamond recently has been produced in the laboratory, and will likely appear in manufactured gem form in the not too distant future.

Over the years we have seen numerous types of manufactured "opal," usually some type of glass. All are miserable failures which even the untrained layman can readily distinguish from the real thing.

The cause of the flashing flames of fire on opal are generally thought to be due to minute fractures either open, or once present and resealed. These minute incipient fractures are thought to act like a prism or grating, breaking up white light into its component colors. This seems to be the most logical cause of the flaming colors. All of the most careful chemical examinations indicate that "common" opal, showing no flashes of color, is identical to the far more valuable fire opal.

Efforts have been directed at simulating these fractures in common opal. At present laboratory workers are subjecting common opal to high vibrations by mechanical means and by electrical thermal currents.

Other workers are starting with various silica gels. Opal generally is regarded as a low temperature deposition, while the silicas are higher temperature deposits. We do at times find quartz crystals showing natural minute fractures as in the rare iris quartz. While this material does, to some extent, break up white light, the optical effect is entirely different than that seen in fire opal.

The better known iris agate comes closer to fire opal than any other silica. The cause of color in iris agate is due simply to minute bands or lines in the agate—ex-

actly like a rule grating widely used in the field of science.

We are not certain as to the cause of color in fire opal, and until this enigma is solved little progress is likely to be made in laboratory production of precious fire opal. It is also possible that opal will continue to resist all efforts at imitation, as it has done for centuries. Theoretically, the problem is a simple one, but often "simple problems" have proven to be the most stubborn to solve.

Let us hope that our flaming and most magnificent of all gems will continue to resist laboratory duplication. It is comforting to know that we have at least one most colorful and valuable gem of which we may be certain that it is not man-made.

More Permits

From club bulletins in various parts of the country we learn of various restrictions being placed on entry into collecting grounds. In many cases these are due to careless and unthinking people who may damage machinery in a quarry, or meet with an accident. In both cases the innocent and accommodating property owner must foot the bill.

Some quarries and gravel pits in the Midwest and East are now charging a nominal 50c entrance fee. This is not for profit for the property owner. The charge is made to enable the property owner to hire a man on Sundays to ride herd on the public. This is done rather than close the place entirely. Fear of accidents has also caused quarry owners and others to refuse entrance to parties with youngsters. For pleasant pastime, youngsters have been known to pour sand into the innards of bearings and machinery.

The celebrated dump at Franklin, New Jersey, known to collectors of magnificent fluorecents, is a city-owned property, where once anyone could enter and dig and gather valuable specimens. Now it is necessary to apply to the local city chief of police for a special permit to enter these collecting grounds. The reason?

A young teenager elected to climb high up on a dump and then roll down a huge rock. It killed a young boy below.

Similar incidents will continue to close more and more properties throughout the country. We fear printed admonitions as presented here are futile, but we continue to run them from time to time.

Better Labels

Those who sell various gem and mineral items should give attention to the proper and correct labeling and identification of the material. A common and well known local name for some material is likely to mean nothing to the customer at a distance; hence when a common local name is used, the proper and correct mineral or gem term should be included.

We get complaints on this from time to time. Obviously the seller in these cases has no intent of fraud or deception; it is merely a matter of carelessness. Correct, and accurate labels often mean repeat orders, or orders for additional materials. A shabby or careless label is likely to convey the impression that the material is more or less worthless.

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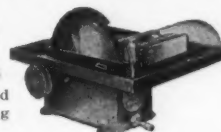
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	\$4.70 gross
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By RANDALL HENDERSON

MY SINCERE appreciation to Chuck Shelton for the generous manner in which he announced my departure from March 1 from an active role at the editorial desk of *Desert Magazine*. Chuck is right, I really have no thought of retiring to a padded arm chair. There are still too many mountains to climb. Not the peaks which require the physical stamina for long hours on steep trails with a pack on my back. At 71 I am too old for that. But there are other more difficult peaks—peaks of understanding in the broad field of human relations, which still seem to be beyond the mental prowess of we humans who live on this earth.

For instance, I still do not understand why, within my lifetime, the German people have twice attempted by war to prove they are a master race—under the leadership of two of the most brutal butchers in history. Nor am I able to understand why, if communism is as good medicine as the Russians say it is, they find it necessary to defend and promote it with a total disregard for truth and honor. Nor is it clear to me why, in this American land of plenty where one segment of the population is drunk with wealth, another segment of 5,000,000 workers and their families are facing the prospect of a meager subsistence on charity.

The answers to such questions as these are the peaks yet to be scaled by the men and women who live on this earth. And in the meantime I am grateful that two young men as honorable and as capable as Chuck Shelton and Gene Conrotto have relieved me of the tedious work of meeting weekly payrolls and computing taxes and rejecting unsuitable manuscripts. I never did enjoy that part of my job—the rejection of the work of honest aspiring journalists who had not yet mastered the art of writing copy acceptable to a cranky editor.

I'll miss the smell of printer's ink, after 48 years around a printshop, but Cyria has provided a delightful substitute. The window of my little home workshop looks out on a colorful garden of petunias, snapdragons and fragrant stocks which have had her loving care since last winter. Just now two hummingbirds are out there getting their morning meal, and I have no doubt they also are grateful to the gal who planted the flowers. In the background of my picture window is the 8000-foot ridge of the Santa Rosa Mountains where, up near the summit early in 1937, Wilson McKenney and I sat beside our campfire and resolved we would start a *Desert Magazine*.

* * *

Between the flower garden and the top of the ridge beyond is a great precipitous gash in the mountainside known as Deep Canyon. In the spring when the snow above is melting, water pours down over three high water-

falls, and even in dry seasons there are numerous springs and waterholes where the rare bighorn sheep come to drink.

Thanks to the generosity of one of my neighbors, Philip Boyd, 1500 acres in the lower sector of Deep Canyon have been given to the University of California to be preserved in perpetuity as a wildlife research sanctuary. Members of the science faculty will come down here to study problems of ecology and evolution in an undisturbed natural desert garden.

And why is that important to you and me? Well, the answer to that question is good for our humility. Those plants and animals, or their predecessors, were on this earth long before man's ancestors climbed down out of the trees of the ancient world, began developing some brain cells with which to think, and acquired a language for the communication of ideas. Man is a comparatively late arrival on this planet.

Those plants and animals—the poets call them flora and fauna, and the scientists refer to them as biota—would be tending to their own affairs and thriving if there were no humans on this earth—in fact they would do better if there were no two-legged anthropoids—that's you and me—plowing up the land, polluting the atmosphere and cluttering up the landscape.

They could get along very well without us—but we would not long survive if it were not for them, or their kind. Without that mysterious process known as photosynthesis which takes place in the leaves and blades of plants, wherein the sun's energy is converted to sugar and other products, there would be neither food for man nor oxygen for him to breathe.

The scientists still have much to learn about the dependence of one form of life on another—and it is good to know that Deep Canyon has been selected as an outdoor laboratory, and also that this lovely watering place for the bighorns is to be preserved in all its primeval beauty.

* * *

It appears that some members of the plant world have a sort of built-in discipline which enable them to thrive without becoming a menace to each other. For instance *Encelia* or incense bush exudes from its leaves a chemical substance which poisons the earth beneath them so other plants cannot gain a foothold and thus threaten their existence. And *Larrea* or creosote bush disseminates from its roots a substance which prevents the germination of other seeds of the same species in close proximity to the plant which already has staked out that claim for itself. Birth control! Surely it is a more humane method than is the unrestricted breeding in some parts of the world of more human beings than the resources of the land will support.



Desert Dawn

By DOROTHY EICHEN

Los Angeles, California

*Desert dawn is a peacock
Strutting across the sky,
Tail fanned out in glory,
Haughty head held high.*

*Desert night is a falcon,
Black wings folded and still,
Watchful eye half wakeful—
Dormant the hunter's will.*



Mariposa Lily

A brilliant flower of the desert, growing below 5000 feet, the Desert Mariposa Lily is one of the loveliest in the Southwest. This flower blooms from March to May, more often singly than in colonies.